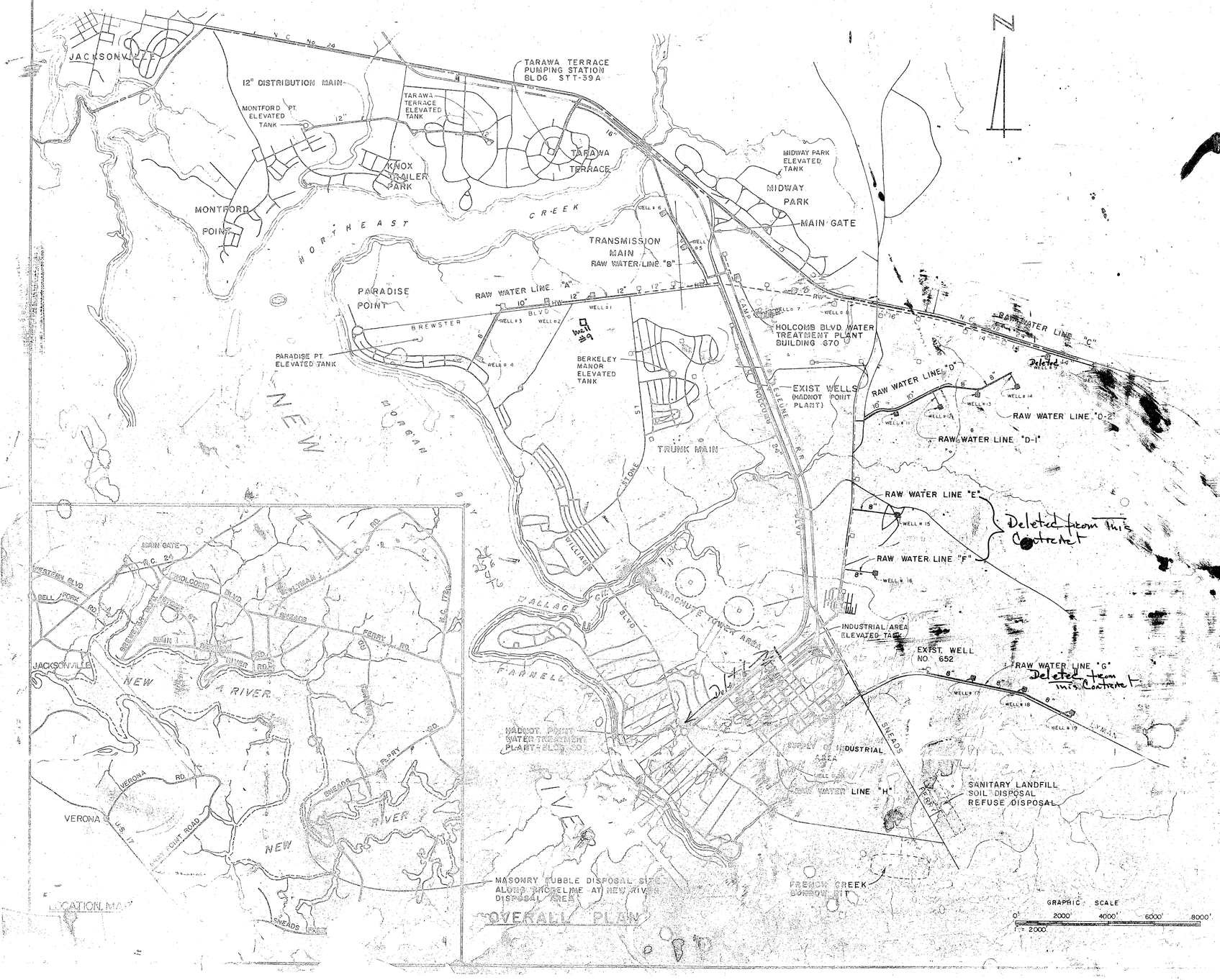
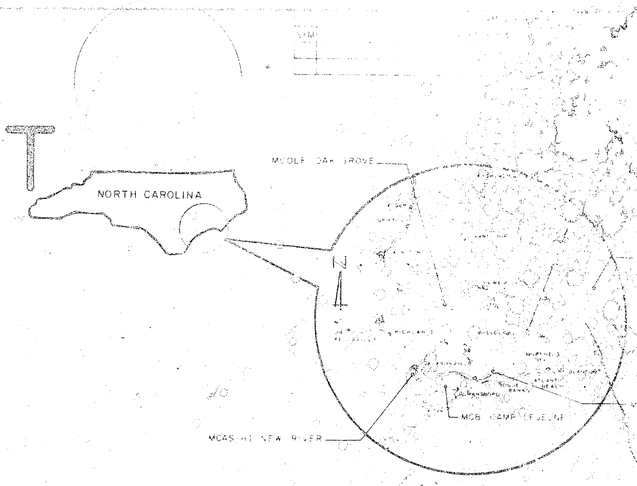
# EXPANSION OF HOLCOMB BLVD. WATER TREATMENT PLANT

As Built Drawings
Do not Remove from CQC's Office

## MARINE CORPS BASE

## CAMP LEJEUNE, NORTH CAROLINA




VICINITY MAP -- CAMP LEJEUNE, N.C.
SCALE 1" = 20 MILES

## SCHEDULE OF DRAWINGS

| SHEET NO. | NAVFAC DRAWING NO. | TITLE | SHEET NO. | NAVFAC DRAWING NO. | TITLE |
|---|---|---|---|---|---|
| CS-1 | 4107534 | LOCATION & VICINITY MAPS | U-6 | 4107581 | RAW WATER LINES "G" & "F" |
| C-1 | 4107535 | SITE PLAN | U-7 | 4107582 | TRANSMISSION MAIN & RW LINE "B" |
| C-2 | 4107536 | PIPING PLAN | U-8 | 4107583 | TRANSMISSION MAIN & RW LINE "B" |
| C-3 | 4107537 | WELL SITES 1 THRU 6 | U-9 | 4107584 | TRANSMISSION MAIN |
| C-4 | 4107538 | WELL SITES 7 THRU 10 | U-10 | 4107585 | TRANSMISSION MAIN |
| C-5 | 4107539 | WELL SITES 11 THRU 15 | U-11 | 4107586 | TRUNK MAIN |
| C-6 | 4107540 | WELL SITES 16 THRU 20 | U-12 | 4107587 | TRUNK MAIN |
| A-1 | 4107541 | TREATMENT PLANT - 1ST FLOOR | U-13 | 4107588 | TRUNK MAIN |
| A-2 | 4107542 | TREATMENT PLANT - 2 ND FLOOR | U-14 | 4107589 | TRUNK MAIN |
| A-3 | 4107543 | TREATMENT PLANT - ELEVATIONS | U-15 | 4107590 | TRUNK MAIN |
| A-4 | 4107544 | TREATMENT PLANT - BUILDING SECTIONS | U-16 | 4107591 | TRUNK MAIN |
| A-5 | 4107545 | TREATMENT PLANT - WALL SECTIONS | U-17 | 4107592 | TRUNK MAIN |
| A-6 | 4107546 | TREATMENT PLANT - WALL SECTIONS | U-18 | 4107593 | DISTRIBUTION MAIN |
| A-7 | 4107547 | TREATMENT PLANT - ROOF PLAN | U-19 | [illegible]7594 | DISTRIBUTION MAIN |
| A-8 | 4107548 | RAW WATER PUMP STATION | U-20 | [illegible]7595 | DISTRIBUTION MAIN |
| A-9 | 4107549 | FINISH WATER PUMP STATION | EU-1 | 4107596 | AERIAL DISTRIBUTION - SITE PLAN |
| S-1 | 4107550 | TREATMENT GALLERY FND. PLAN | EU-2 | [illegible]97 | SCHEDULE OF POLES |
| S-2 | 4107551 | TREATMENT GALLERY ROOF PLANS | E-1 | 4107598 | ELECTRICAL - SITE PLAN |
| S-3 | 4107552 | FOUNDATION & FIRST FLOOR PLANS | E-2 | 4107599 | ELECTRICAL - PIPE GALLERY |
| S-4 | 4107553 | SECOND FLOOR & ROOF PLANS | E-3 | [illegible]7600 | ELECTRICAL - TREATMENT ADDITION |
| S-5 | 4107554 | SECTIONS & DETAILS | E-4 | 4107601 | ELECTRICAL - FILTER GALLERY |
| S-6 | 4107555 | STRUCTURAL SCHEDULES | E-5 | 4107602 | ELECTRICAL - EXISTING PUMP HOUSE |
| S-7 | 4107556 | FILTER PLAN & SCHEDULE | E-6 | 4107603 | ELECTRICAL - RAW WATER PUMP STATION |
| S-8 | 4107557 | ACID & CHLORINE STORAGE | E-7 | 4107604 | ELECTRICAL - FINISH WATER PUMP STATION |
| S-9 | 4107558 | ACID & CHLORINE STORAGE | E-8 | 4107605 | ELECTRICAL - TYPICAL WELL HOUSE |
| S-10 | 4107559 | RAW WATER RESERVOIR | E-9 | 4107606 | ELECTRICAL - EXISTING WELL HOUSE |
| S-11 | 4107560 | RAW WATER RESERVOIR | E-10 | 4107607 | ELECTRICAL - TARAWA TERRACE |
| S-12 | 4107[illegible] | RAW WATER RESERVOIR - ALTERNATE | | | |
| S-13 | 4107[illegible] | FINISH WATER RESERVOIR | | | |
| S-14 | 4107563 | FINISH WATER RESERVOIR | | | |
| S-15 | 4107564 | FINISH WATER RESERVOIR | | | |
| S-16 | 4107565 | RESERVOIR - MISC. DETAILS | | | |
| M-1 | 4107566 | FILTER PIPING & PLANS | | | |
| M-2 | 4107567 | EQUIPMENT & PIPING | | | |
| M-3 | 4107568 | ACID & CHLORINE SYSTEMS | | | |
| M-4 | 4107569 | RESERVOIR UNDERDRAIN SYSTEM | | | |
| M-5 | 4107570 | PUMP STATION PIPING PLANS | | | |
| M-6 | 4107571 | FINISH WATER PUMPING STATION | | | |
| M-7 | 4107572 | TARAWA TERRACE PUMPING STATION | | | |
| M-8 | 4107573 | TREATMENT PLANT - HVAC PLAN | | | |
| M-9 | 4107574 | TREATMENT PLANT - PLUMBING PLAN | | | |
| M-10 | 4107575 | CONTROL & FLOW DIAGRAM | | | |
| U-1 | 4107576 | RAW WATER LINES "A" & "B" | | | |
| U-2 | 4107577 | RAW WATER LINE "D" | | | |
| U-3 | 4107578 | RAW WATER LINE "D" | | | |
| U-4 | 4107579 | RAW WATER LINES "D-1" & "D-2" | | | |
| U-5 | 4107580 | RAW WATER LINES "C", "E" & "H" | | | |

LEGEND
EXISTING WELL
NEW WELL

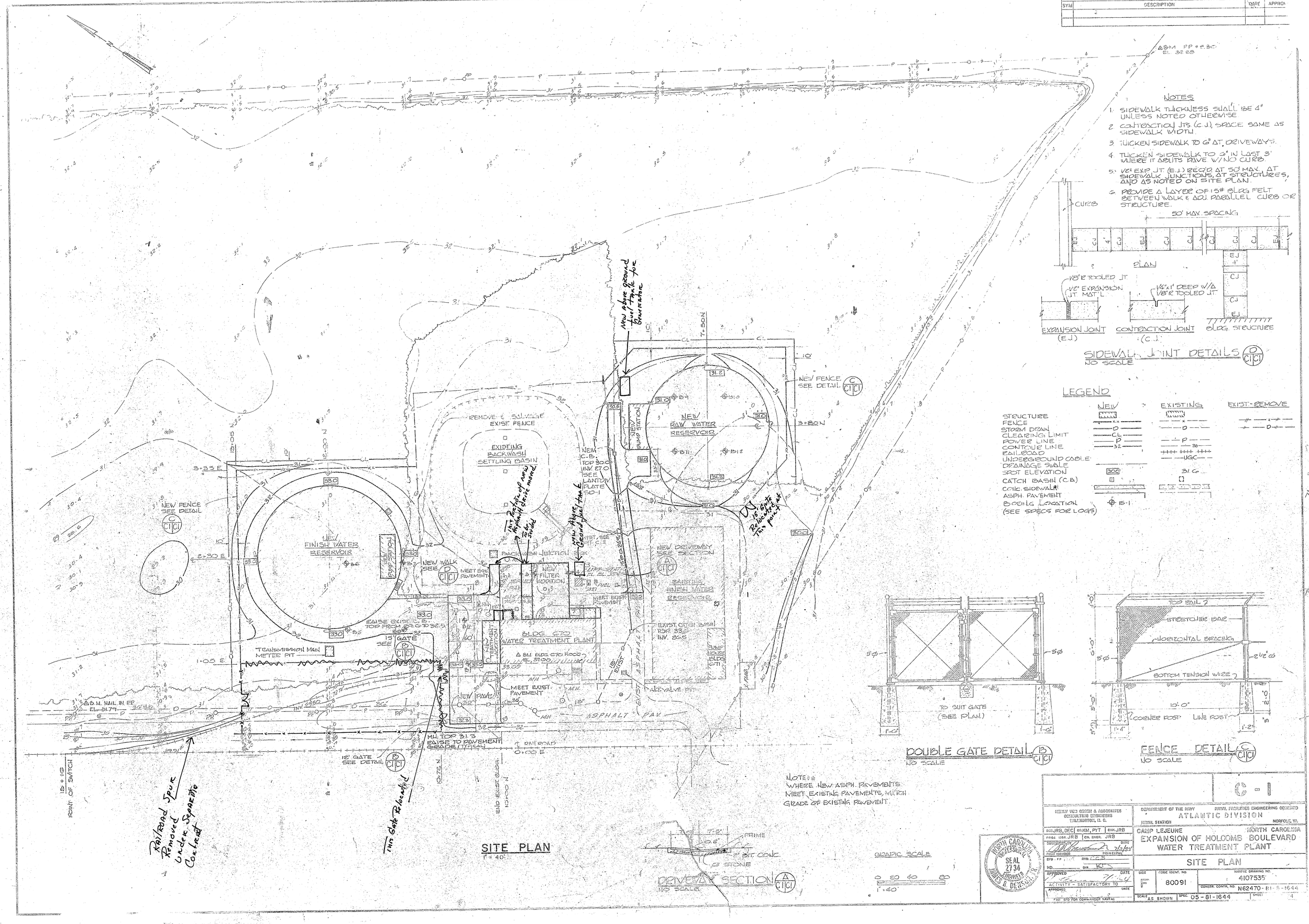
CS-1

HENRY WEN GEORGE & ASSOCIATES, CONSULTING ENGINEERS, WILMINGTON, N.C.

DESIGNED BY RYT CHK. BY JRB
DRAWN WM JRB CHECKED JRB
DATE 2/7/79

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NORFOLK, VA.
NAVAL STATION
CAMP LEJEUNE, N.C.
EXPANSION OF HOLCOMB BLVD. WATER TREATMENT PLANT
MARINE CORPS BASE
CAMP LEJEUNE, N.C.

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROV |
| | | | |
| | | | |




SITE PLAN
1" = 40'

## NOTES

1. SIDEWALK THICKNESS SHALL BE 4" UNLESS NOTED OTHERWISE
2. CONTRACTION JTS (C.J.), SPACE SAME AS SIDEWALK WIDTH.
3. THICKEN SIDEWALK TO 6" AT DRIVEWAYS.
4. THICKEN SIDEWALK TO 5" IN LAST 3' WHERE IT ABUTS PAVE W/NO CURB.
5. 1/2" EXP. JT (E.J.) REQ'D AT 50' MAX. AT SIDEWALK JUNCTIONS, AT STRUCTURES, AND AS NOTED ON SITE PLAN.
6. PROVIDE A LAYER OF 15# BLDG FELT BETWEEN WALK & ADJ. PARALLEL CURB OR STRUCTURE.




SIDEWALK JOINT DETAILS (D C1C1)
NO SCALE

## LEGEND

| | NEW | EXISTING | EXIST.-REMOVE |
|---|---|---|---|
| STRUCTURE | | | |
| FENCE | —xx— | —x— | —x—x— |
| STORM DRAIN | —D— | —D— | —D—D— |
| CLEARING LIMIT | —CL— | | |
| POWER LINE | —P— | —P— | |
| CONTOUR LINE | —32— | —30— | |
| RAILROAD | | | |
| UNDERGROUND CABLE | | —UGC— | |
| DRAINAGE SWALE | | | |
| SPOT ELEVATION | 30.0 | 31.6 | |
| CATCH BASIN (C.B.) | | | |
| CONC. SIDEWALK | | | |
| ASPH. PAVEMENT | | | |
| BORING LOCATION (SEE SPECS FOR LOGS) | B-1 | | |




DOUBLE GATE DETAIL (B C1C1)
NO SCALE




FENCE DETAIL (C C1C1)
NO SCALE

NOTE:
WHERE NEW ASPH. PAVEMENTS MEET EXISTING PAVEMENTS, MATCH GRADE OF EXISTING PAVEMENT.




DRIVEWAY SECTION (A C1C1)
NO SCALE

GRAPIC SCALE
0 20 40 80
1" = 40'

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. DEVILLE

C-1

| | |
|---|---|
| HIGHSMITH GOOTH & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C. | DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NAVAL STATION NORFOLK, VA. |
| DES. JRB, DEC DR. KM, PYT CHK. JRB | CAMP LEJEUNE NORTH CAROLINA |
| PROJ. ENR. JRB CH. ENGR. JRB | EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT |
| SUPERVISOR DATE 7/2/04 FIRST ENGINEER PRINCIPAL | SITE PLAN |
| EFD - FP DVD. CCS HD. DIR. | |
| APPROVED DATE ACTIVITY - SATISFACTORY TO APPROVED DATE | SIZE F / CODE IDENT. NO. 80091 / NAVFAC DRAWING NO. 4107535 / CONSTR. CONTR. NO. N62470-81-5-1644 |
| FOR CO FOR COMMANDER NAVFAC | SCALE AS SHOWN / SPEC. 05-81-1644 / SHEET 4 |

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
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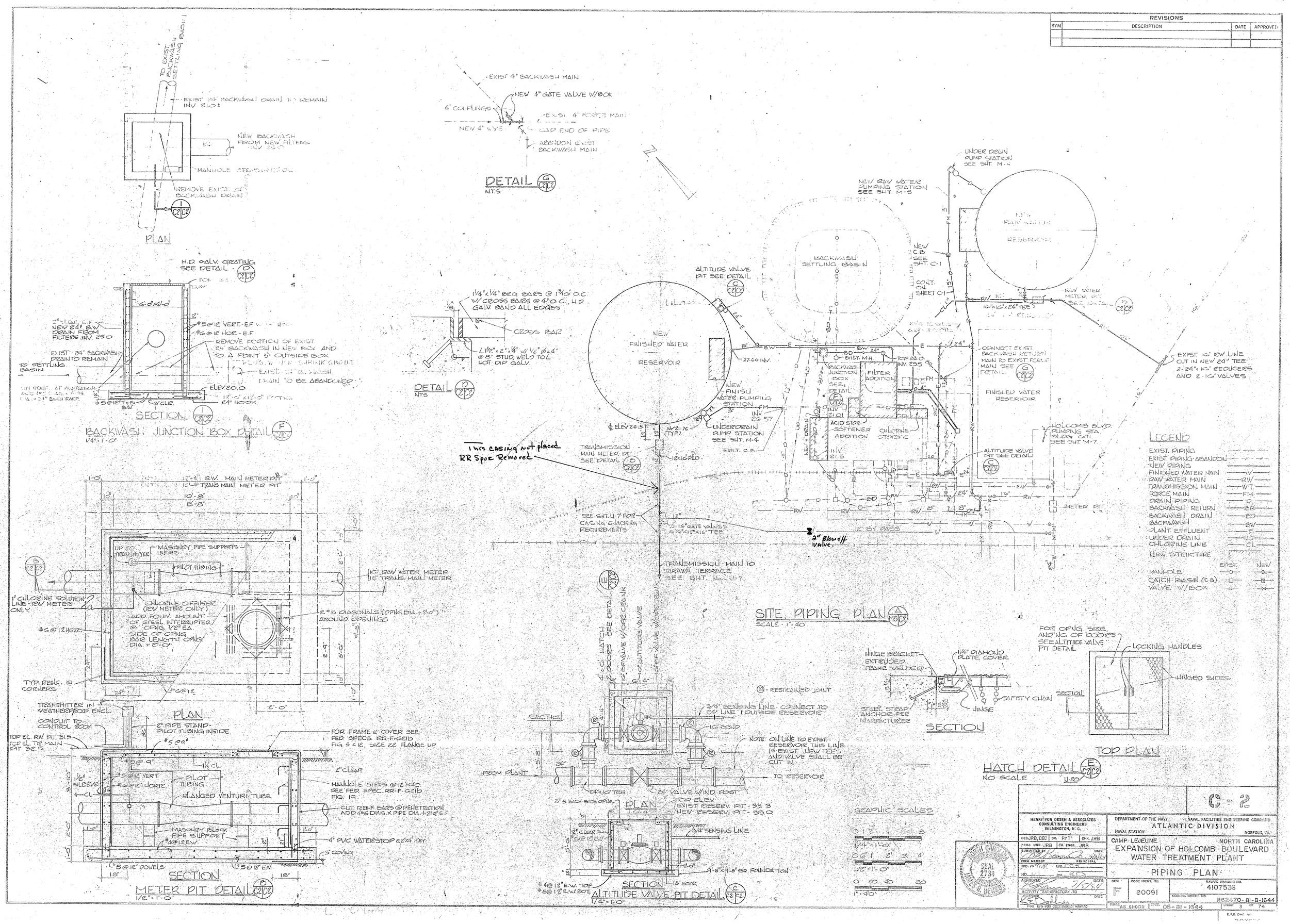

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
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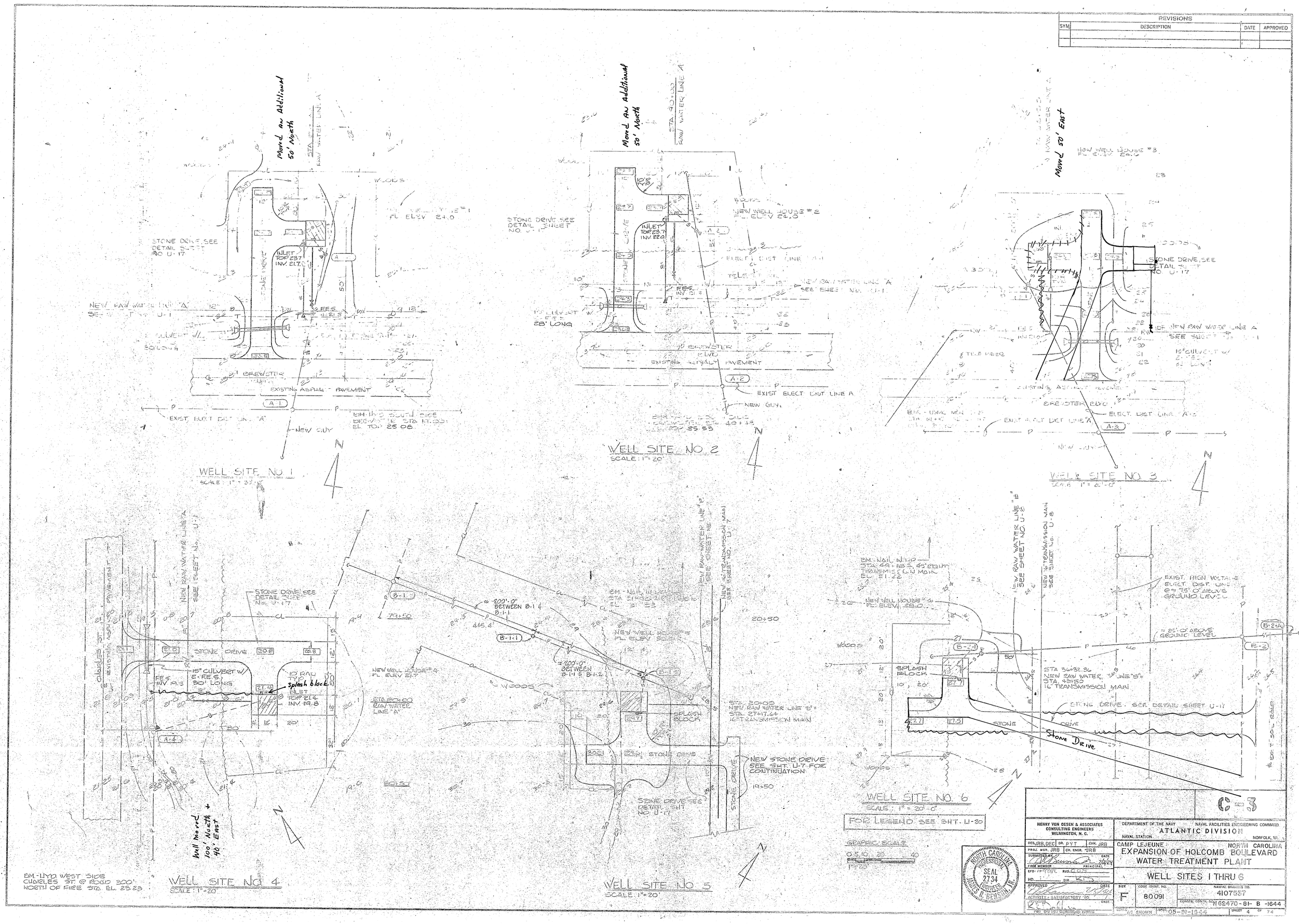
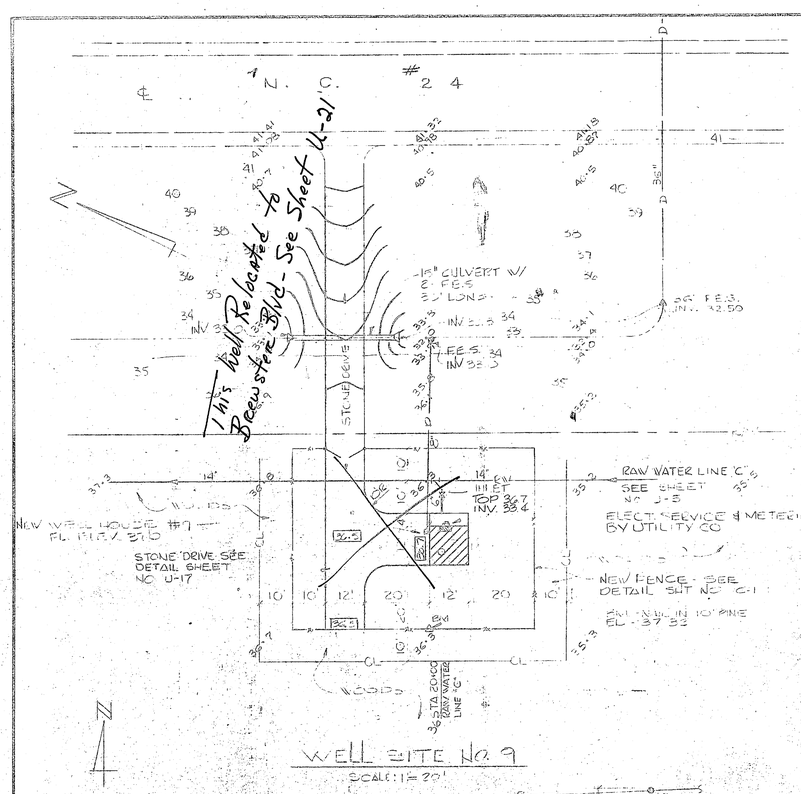
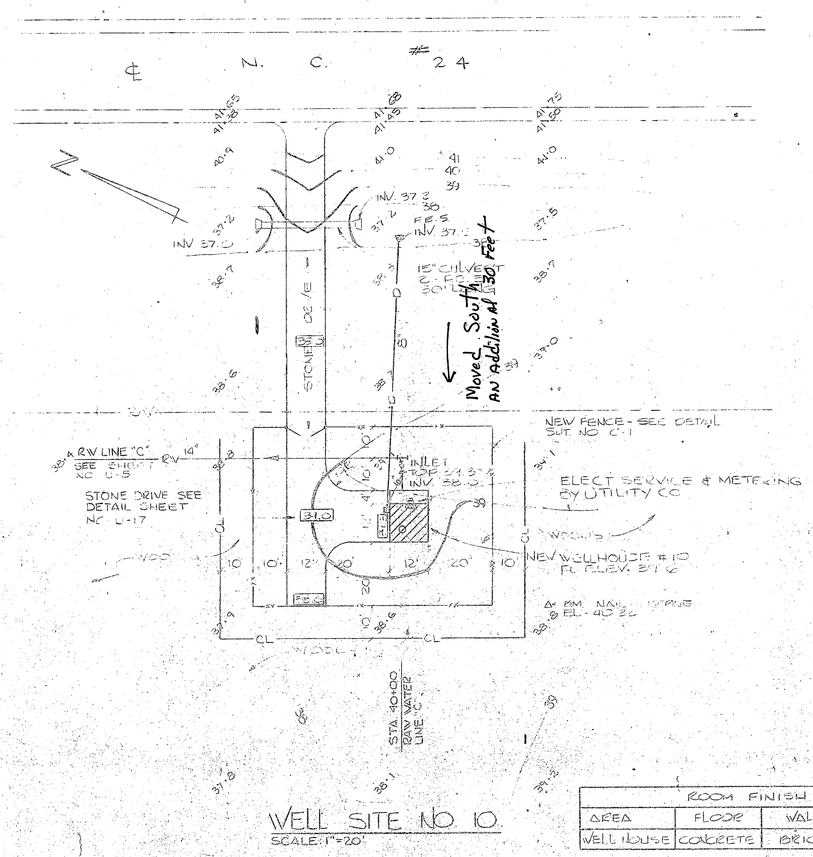


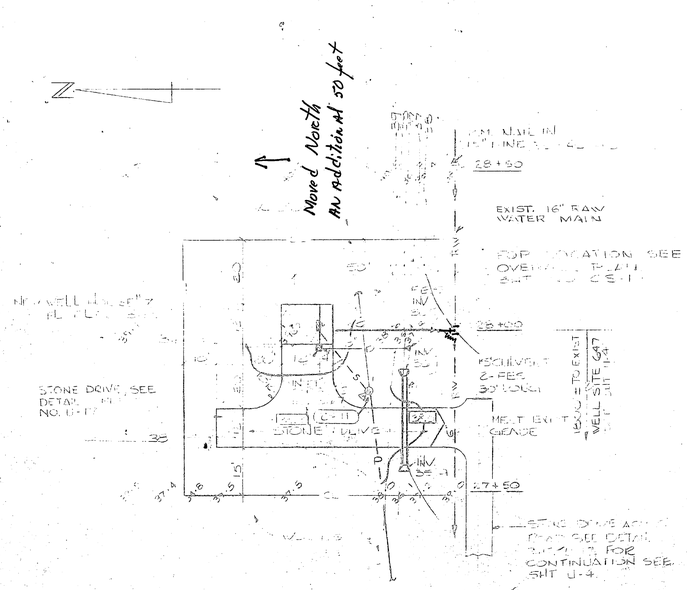
| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |




WELL SITE NO 9
SCALE: 1"=20'

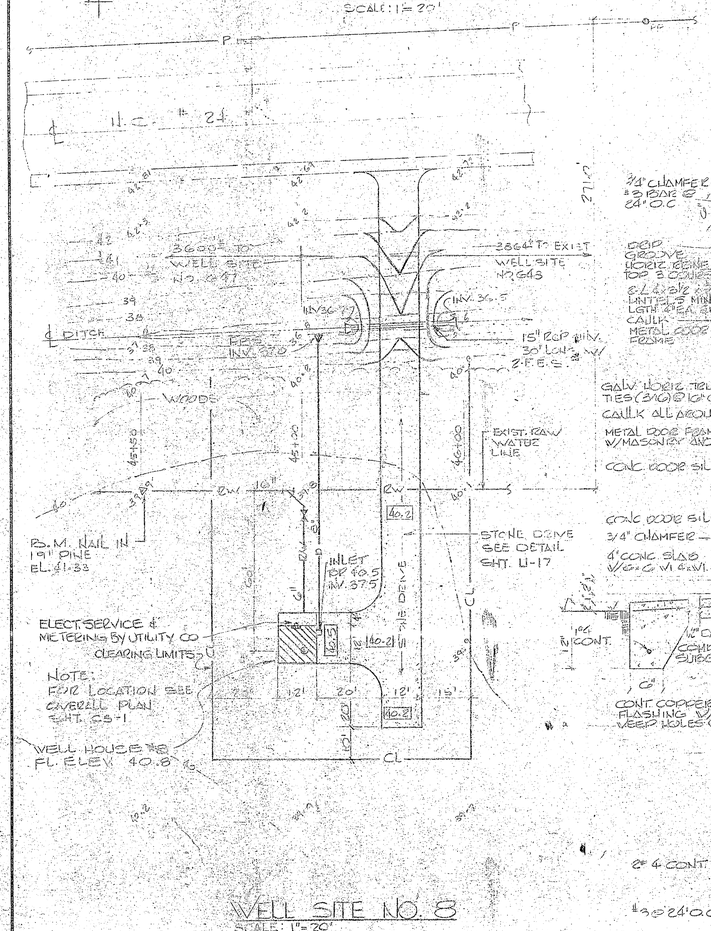



WELL SITE NO 10
SCALE: 1"=20'

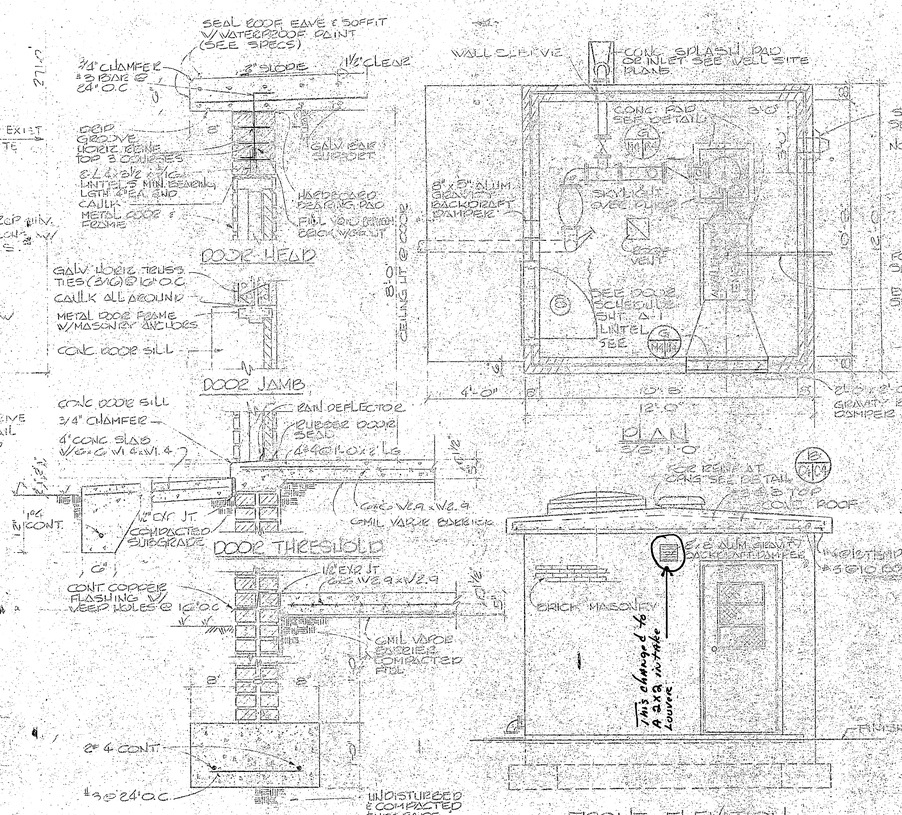



WELL SITE NO. 7
SCALE: 1"=20'

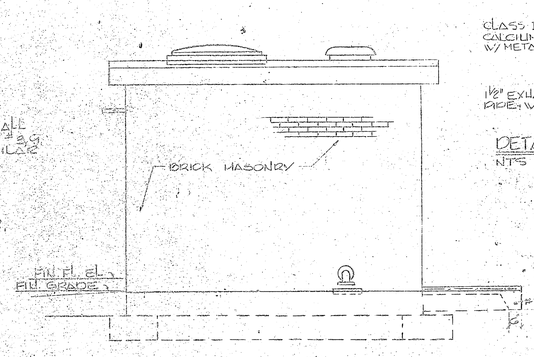
| ROOM FINISH SCHEDULE | | | | |
|---|---|---|---|---|
| AREA | FLOOR | WALLS | CEILING | REMARKS |
| WELL HOUSE | CONCRETE | BRICK | EXPOSED CONC | |



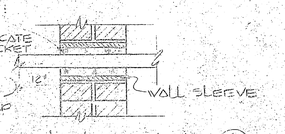

WELL SITE NO. 8
SCALE: 1"=20'



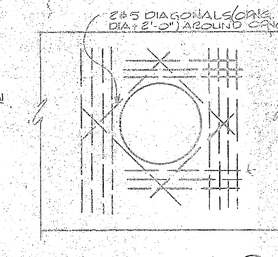

FRONT ELEVATION
3/8" = 1'-0"



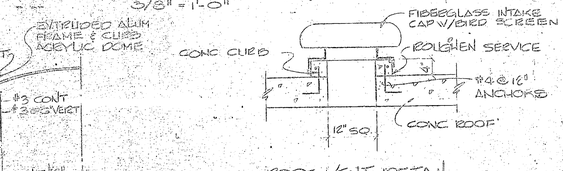

LEFT SIDE ELEVATION
3/8" = 1'-0"




DETAIL - THRU WALL EXHAUST
NTS




TYPICAL SLAB OPNG.
N.T.S.




DETAIL - SKYLIGHT
NTS




ROOF VENT DETAIL
NO SCALE

GRAPHIC SCALE
0.5 1.0 2.0 4.0
1" = 20'

0 1' 2' 3' 4' 5'
3/8" = 1'-0"

C-6

HENRY VON OESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.

DEPARTMENT OF THE NAVY | NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VA.

DES. JRB, DEC | DR. LGL | CHK. JRB
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY: FIRM MEMBER / PRINCIPAL — DATE 7/2/84
EFD - FP RVD. CCS
HD. DIR. RC
APPROVED: ACTIVITY - SATISFACTORY TO — DATE 7/5/84
APPROVED: FOR: EFD FOR COMMANDER NAVFAC — DATE

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. BERNARD JR.

CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD
WATER TREATMENT PLANT

WELL SITES 7 THRU 10

SIZE: F | CODE IDENT. NO. 80091 | HAVFIC DRAWING NO. 4107538
CONSTR. CONTR. NO. N62470-81-B-1644
SCALE: AS SHOWN | SPEC. 05-81-1644 | SHEET 5 OF 74
E.F.D. DWG. NO. 207538

| REVISIONS | | | |
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| SYM | DESCRIPTION | DATE | APPROVED |
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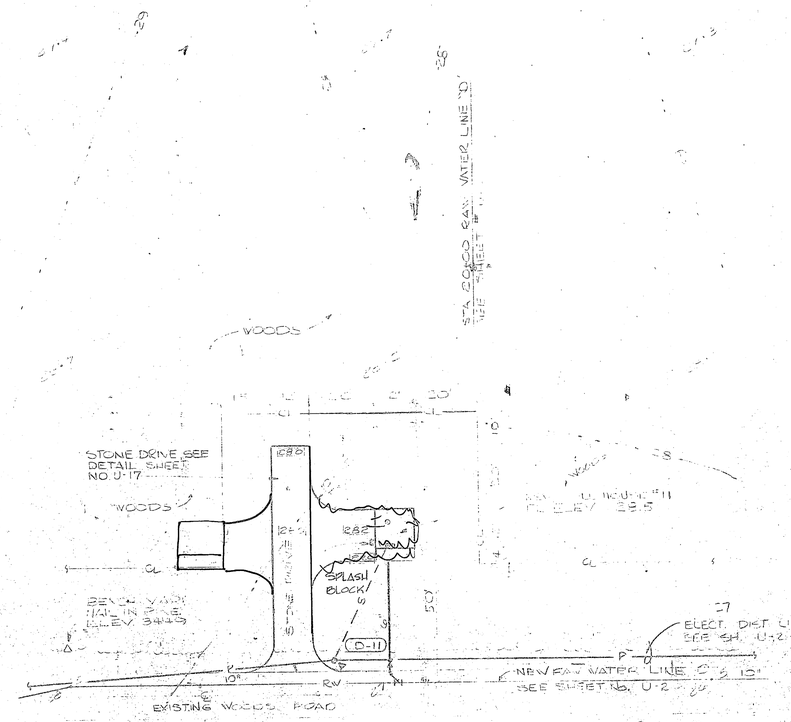
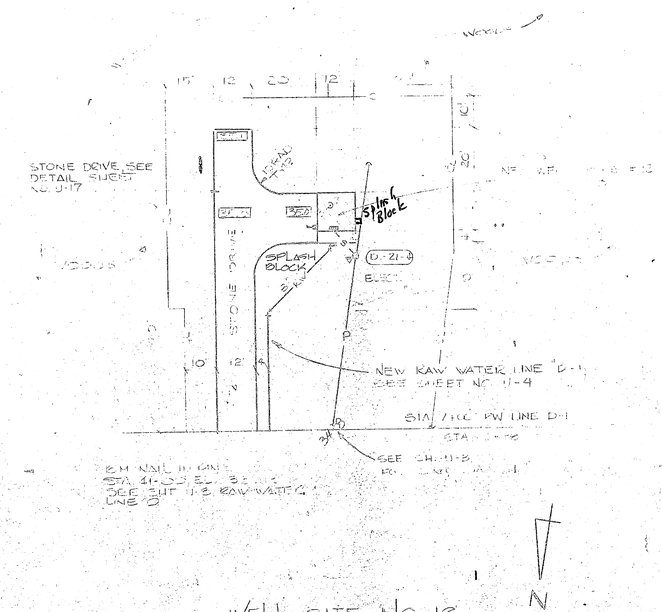
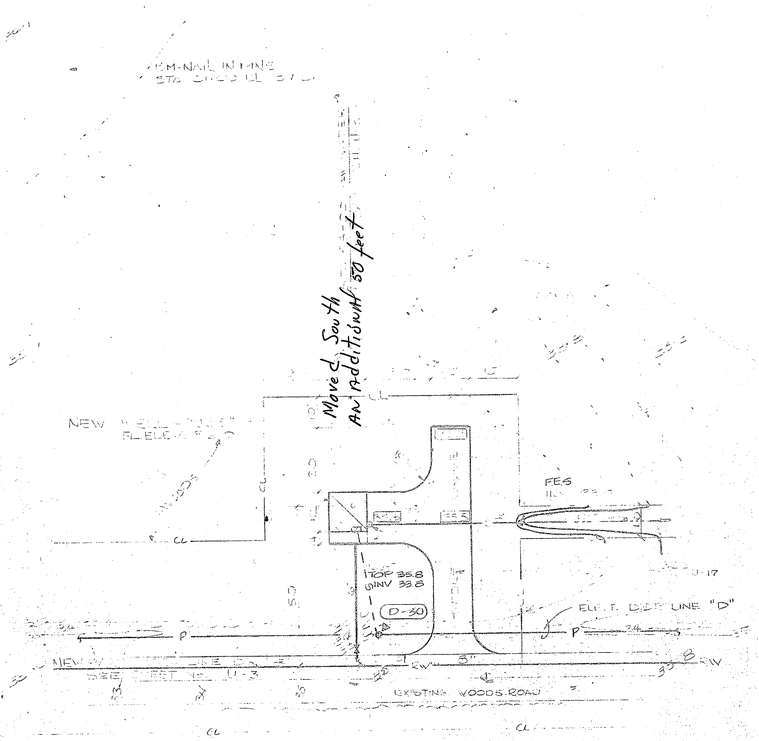


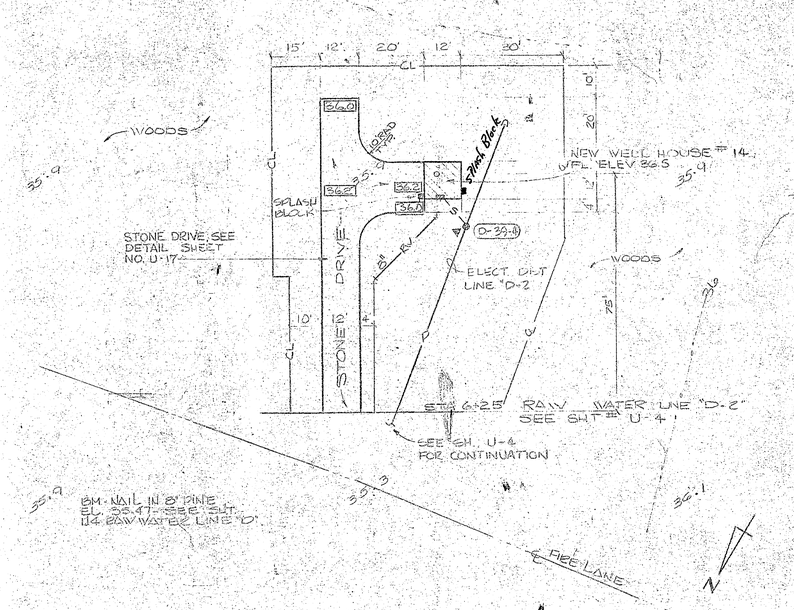

WELL SITE No 11
SCALE: 1"=20'



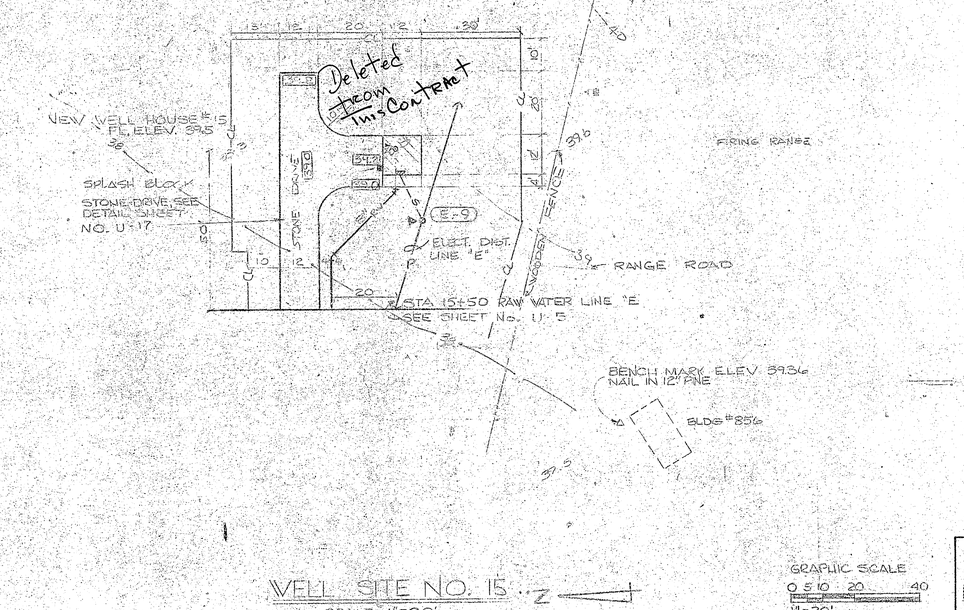

WELL SITE No 12
SCALE: 1"=20'




WELL SITE NO. 13
SCALE: 1"=20'




WELL SITE No 14
SCALE: 1"=20'




WELL SITE NO. 15
SCALE: 1"=20'

GRAPHIC SCALE
0 5 10 20 40
1" = 20'

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. DENSON, JR.

C-5

HENRY VON DESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.

DES. JRS, DEC — DR. BM — CHK. JRS
PROJ. MGR. JRB — CH. ENGR. JRB
SUBMITTED BY — DATE 7/6/84
FIRM MEMBER — PRINCIPAL
EFD - FP TYREE — RVD.
HD. — DIR.
APPROVED — DATE 7/6/84
ACTIVITY - SATISFACTORY TO
APPROVED — DATE
OIC, EFD CONTRACTS DIVISION

CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

WELL SITES 11 THRU 15

SIZE: F — CODE IDENT. NO. 80091 — NAVFAC DRAWING NO. 4107539
CONSTR. CONTR. NO. N62470-81-B-1644
SCALE: AS SHOWN — SPEC. 05-81-1844 — SHEET 6 OF
EFD 0107

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
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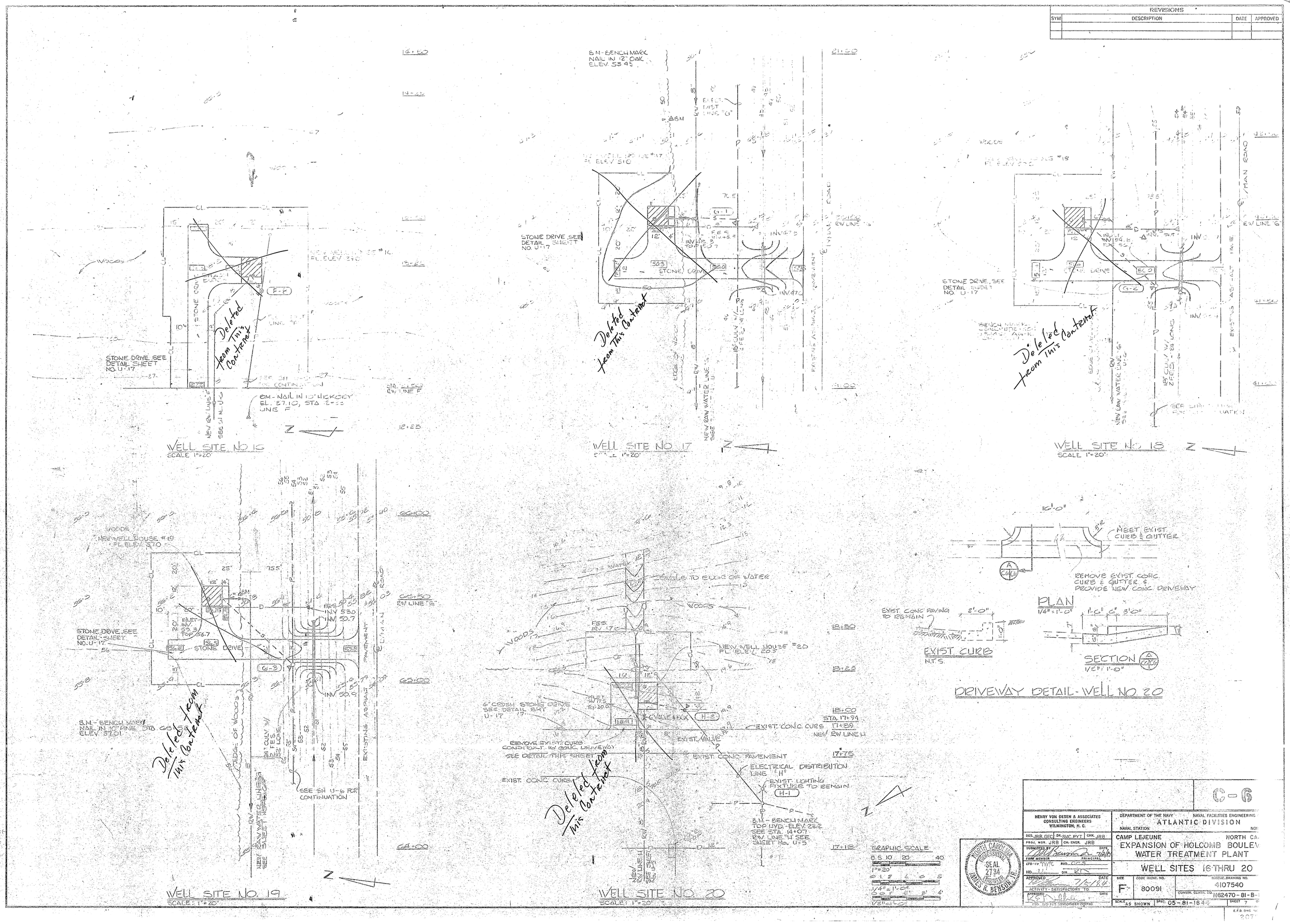



C-6

HENRY VON DESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING
ATLANTIC DIVISION
NAVAL STATION — NOR

DES. JRB DEC | DR. SMC, PYT | CHK. JRB
PROJ. MGR. JRB | CH. ENGR. JRB

CAMP LEJEUNE — NORTH CA
EXPANSION OF HOLCOMB BOULEV
WATER TREATMENT PLANT

WELL SITES 16 THRU 20

SUBMITTED BY — DATE 7/21/81
FIRM MEMBER — PRINCIPAL
EPD TEAM — AVD. CCS
HD. — DR. RTS
APPROVED — DATE 7/21/81
ACTIVITY - SATISFACTORY TO
APPROVED — DATE
FOR COMMANDER NAVFAC

SIZE F | CODE IDENT. NO. 80091 | NAVFAC DRAWING NO. 4107540
CONTR. CONTR. NO. N62470-81-B-
SCALE AS SHOWN | SPEC. 05-81-164 | SHEET 7

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. BENSON, JR.

E.F.D. DWG. NO.

## DOOR SCHEDULE

| SYMBOL | SIZE | TYPE | GLAZING | LOUVERS | FRAME | REMARKS |
|---|---|---|---|---|---|---|
| 1 | 3'-0" x 7'-0" x 1 3/4" | HOLLOW METAL | ~~24" x 36"~~ 10X10 WIRE GLASS | NONE | HOLLOW METAL | |
| 2 | DO | DO | DO | DO | DO | |
| 3 | DO | DO | DO | 14" x 24" (MATCH EXIST'G) | DO | |
| 4 | GATE 3'-0" x 9'-2" | ALUM. (Galv) CHAIN LINK FABRIC | NONE | NONE | GALV. STEEL | See Spec Sect 02411 for Gates |
| 5 | DO | DO | DO | DO | DO | |
| 6 | (UNEQUAL GATES) 10'-9" x 8'-6" | DO | DO | DO | DO | PROVIDE RAIL OF UNEQUAL GATE TO FIT 10'-9" OPENING W/ONE GATE NOTCHED @ HOIST BEAM |
| 7 | (EQUAL GATES) 5'-9" x 9'-0" PR. | DO | DO | DO | DO | |
| 8 | 3'-0" x 6'-5" x 1 3/4" | HOLLOW METAL | ~~24" x 36"~~ WIRE GLASS | DO | HOLLOW METAL | SEE FINISH WATER & RAW WATER PUMP BUILDINGS, SEE SHEETS A-8, A-9 |
| 9 | 4'-0" x 6'-8" x 1 3/4" | DO | NONE | DO | DO | DO |
| 10 | 3'-0" x 6'-2" x 1 3/4" PR | DO | DO | DO | DO | DO |
| 11 | 3'-0" x 6'-10" x 1 3/4" | DO | DO | DO | DO | DO |
| 12 | 3'-0" x 6'-10" x 1 3/4" PR | DO | DO | DO | DO | DO |

See Amend #4

Amend #1 Galvanized Chain Link Fabric

## ROOM FINISH SCHEDULE

| AREA | FLOOR | WALLS | WAINSCOT | CEILING | REMARKS |
|---|---|---|---|---|---|
| TREATMENT GALLERY | CONCRETE | PAINTED CONCRETE & MAS. BLK. | NONE | PAINTED EXPOSED CONC. | |
| PIPE GALLERY | DO | DO | DO | DO | |
| FILTER GALLERY | QUARRY TILE | DO | DO | DO | PROVIDE QUARRY TILE BASE |
| CHLORINE STORAGE | CONCRETE | BRICK & (Galv) ALUMINUM CHAIN LINK FABRIC | DO | PAINTED JSTS W/ EXPOSED CONC. | |
| $CO_2$ STORAGE (Acid) | DO | Brick | DO | DO | Acid Storage and Acid feed has 1 painted Masonry Block Wall. |
| $CO_2$ FEED (Acid) | DO | BRICK | DO | DO | |
| PUMP HOUSE RAW & FIN. WATER | DO | DO SEE REMARKS | DO | PAINTED JSTS W/ EXPOSED DECK | RAW WATER PUMP HOUSE HAS ONE PAINTED MASONRY BLOCK WALL |

See Amend #4

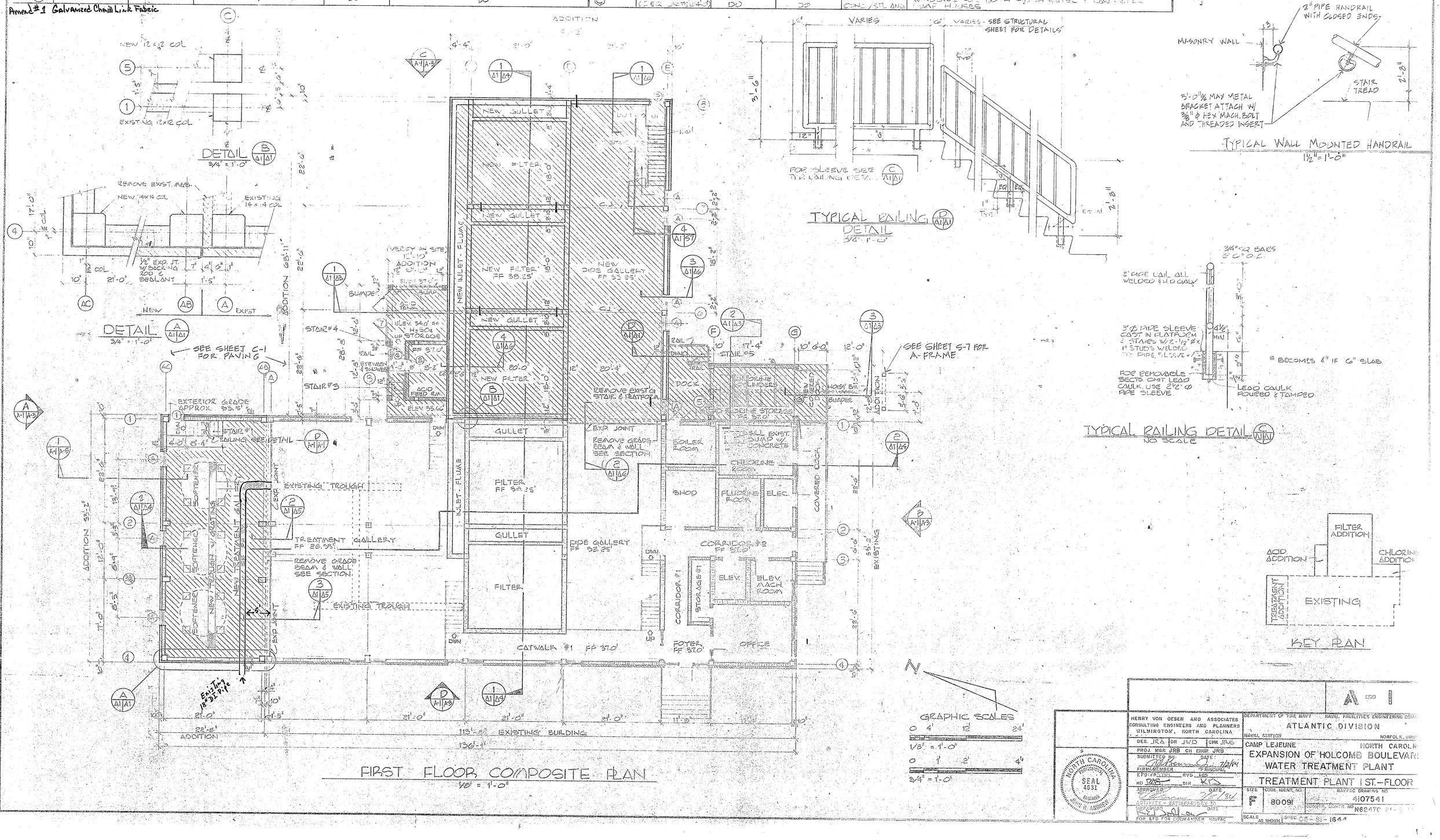
Painted Concrete + Masonry Block

## WINDOW SCHEDULE

| SYMBOL | SIZE | TYPE | GLAZING | LINTEL | REMARKS |
|---|---|---|---|---|---|
| A | 3'-4" x 21'-6" x 2" (SEE ELEVATIONS) | ALUMINUM AWNING | MATCH EXISTING | CONCRETE | MATCH EXISTING WINDOW (FRAME, GLAZING & INSULATED PANEL) |
| B | (12'-0" x 3'-0" x 2") (3 EQ. UNITS 24'-0") | DO | DO | DO | MATCH EXISTING WINDOW (FRAME & GLAZING) |
| C | 3'-0" x 2'-3" x 2" (2 EQ. UNITS @ 4'-0") | DO | DO | CONC./STL ANG | WINDOWS FOR BOTH FINISH WATER & RAW WATER PUMP HOUSES |

## REVISIONS

| SYM | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |



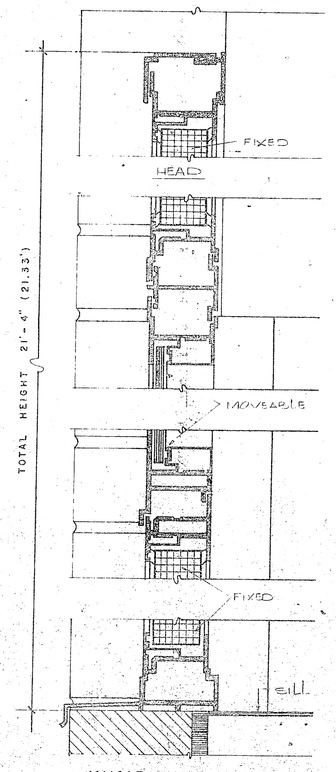

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DES. JRA DR JWD CHK JRB
PROJ. MGR. JRB CH. ENGR. JRB
SUBMITTED BY: DATE 7/2/81
FIRM MEMBER PRINCIPAL
EFD PROJ. ENGR. RVD LEE
HD JRB DIR KTS
APPROVED DATE 7/2/81
ACTIVITY - SATISFACTORY TO
APPROVED DATE
FOR EFD FOR COMMANDER NAVFAC

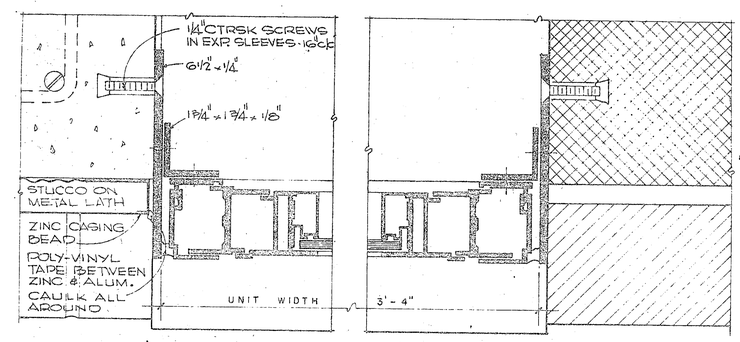
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 4031 JOHN W. CROSS

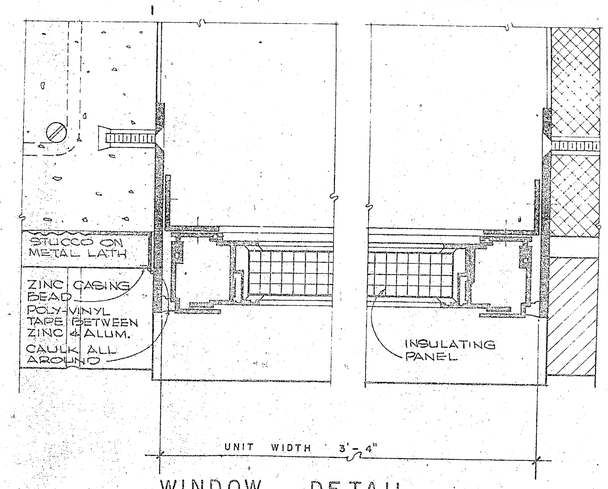
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VIRGINIA
CAMP LEJEUNE NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
TREATMENT PLANT 1ST.-FLOOR

| SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO |
|---|---|---|
| F | 80091 | 4107541 |
| SCALE AS SHOWN | SPEC 05-81-1641 | CONTR. CONTR. NO N62470 |




WINDOW DETAIL (A)
SCALE 6" = 1'-0"

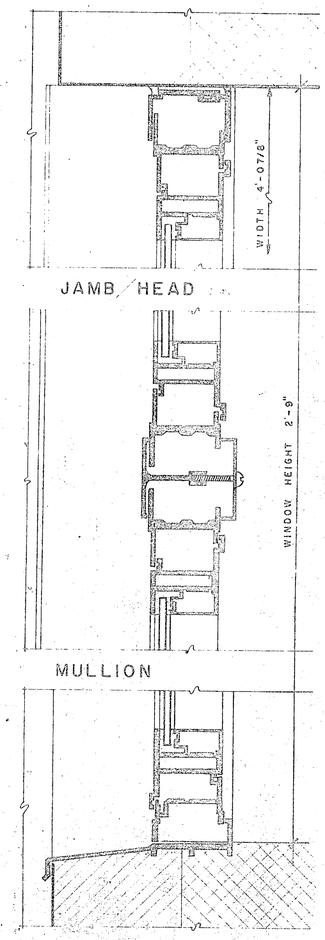


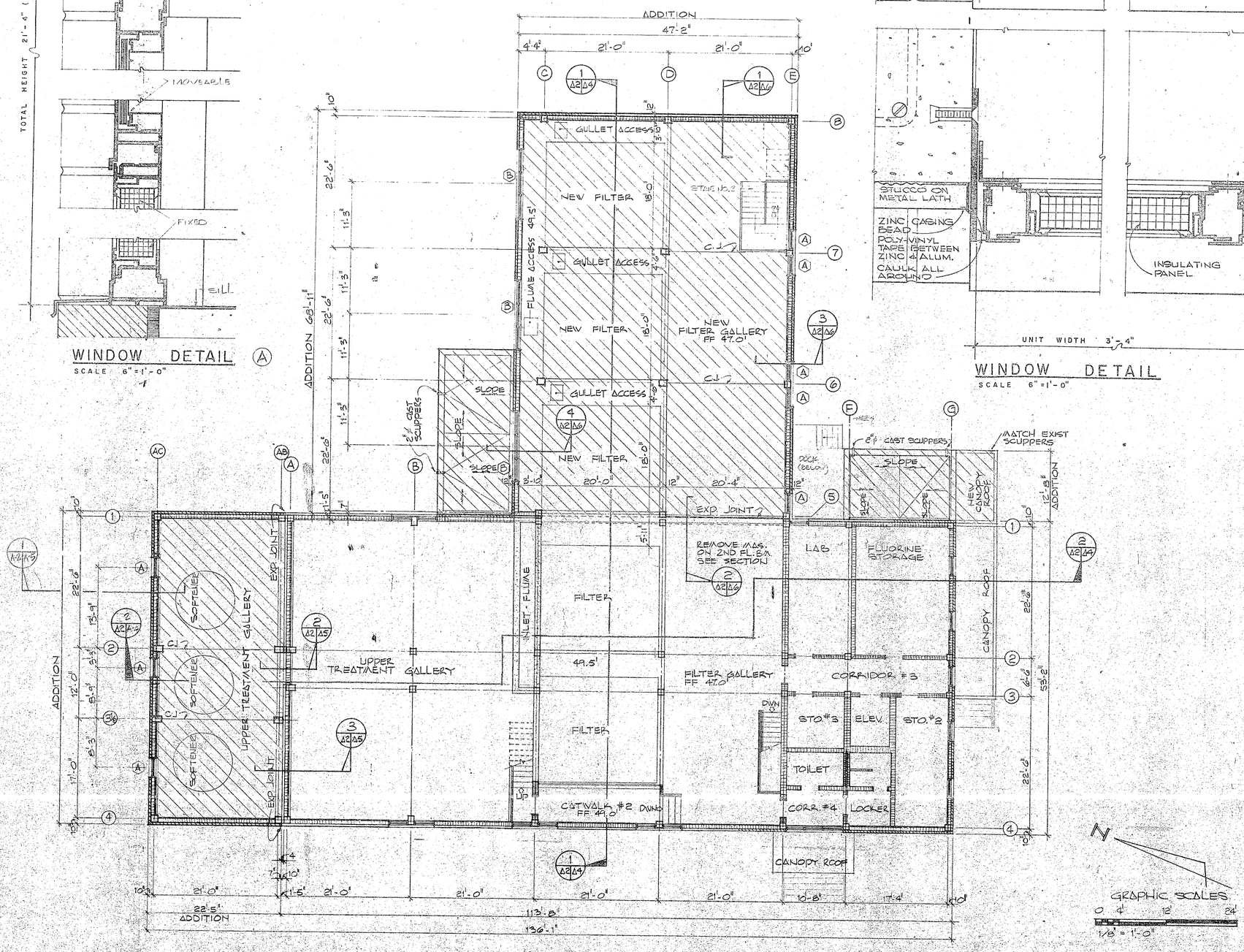

WINDOW DETAIL
SCALE 6" = 1'-0"

REVISIONS

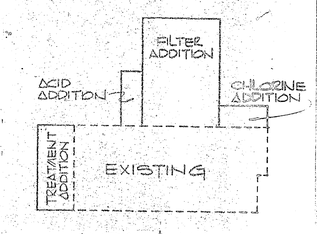
| SYM | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |




DETAIL OF CLERESTORY WINDOWS (B)
SCALE 6" = 1'-0"




SECOND FLOOR COMPOSITE PLAN
1/8" = 1'-0"




KEY PLAN

N

GRAPHIC SCALES
0 4' 12' 24'
1/8" = 1'-0"

A-2

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

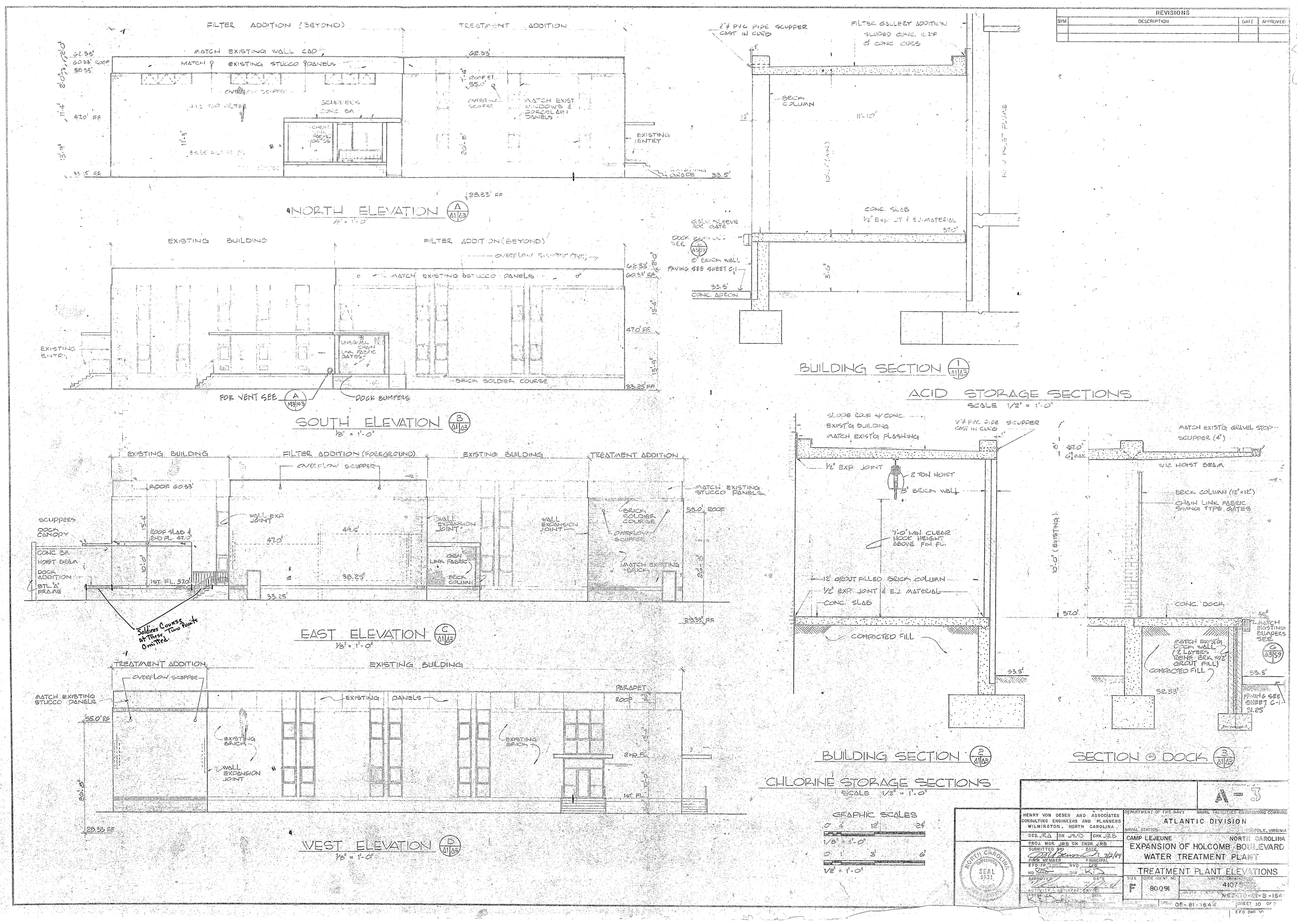
DES. JRA DR. JVD CHK. JRB
PROJ. MGR. JRB CH. ENGR. JRB
SUBMITTED BY: DATE: 7/6/84
FIRM MEMBER PRINCIPAL
EFD-FP RVD
HO DIR
APPROVED DATE
ACTIVITY - SATISFACTORY TO
APPROVED DATE
FOR EFD FOR COMMANDER NAVFAC

NORTH CAROLINA PROFESSIONAL SEAL 4631 ENGINEER JOHN R. ANDREW

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VIRGINIA
CAMP LEJEUNE NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
TREATMENT PLANT - 2ND FLOOR

| SIZE | CODE IDENT NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 4107842 |

CONSTR. CONTR. NO. N62470-81-B-1643
SCALE AS SHOWN SPEC. 05-81-1644 SHEET 9 OF 72
EFD DWG NO.




| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |

A-3

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

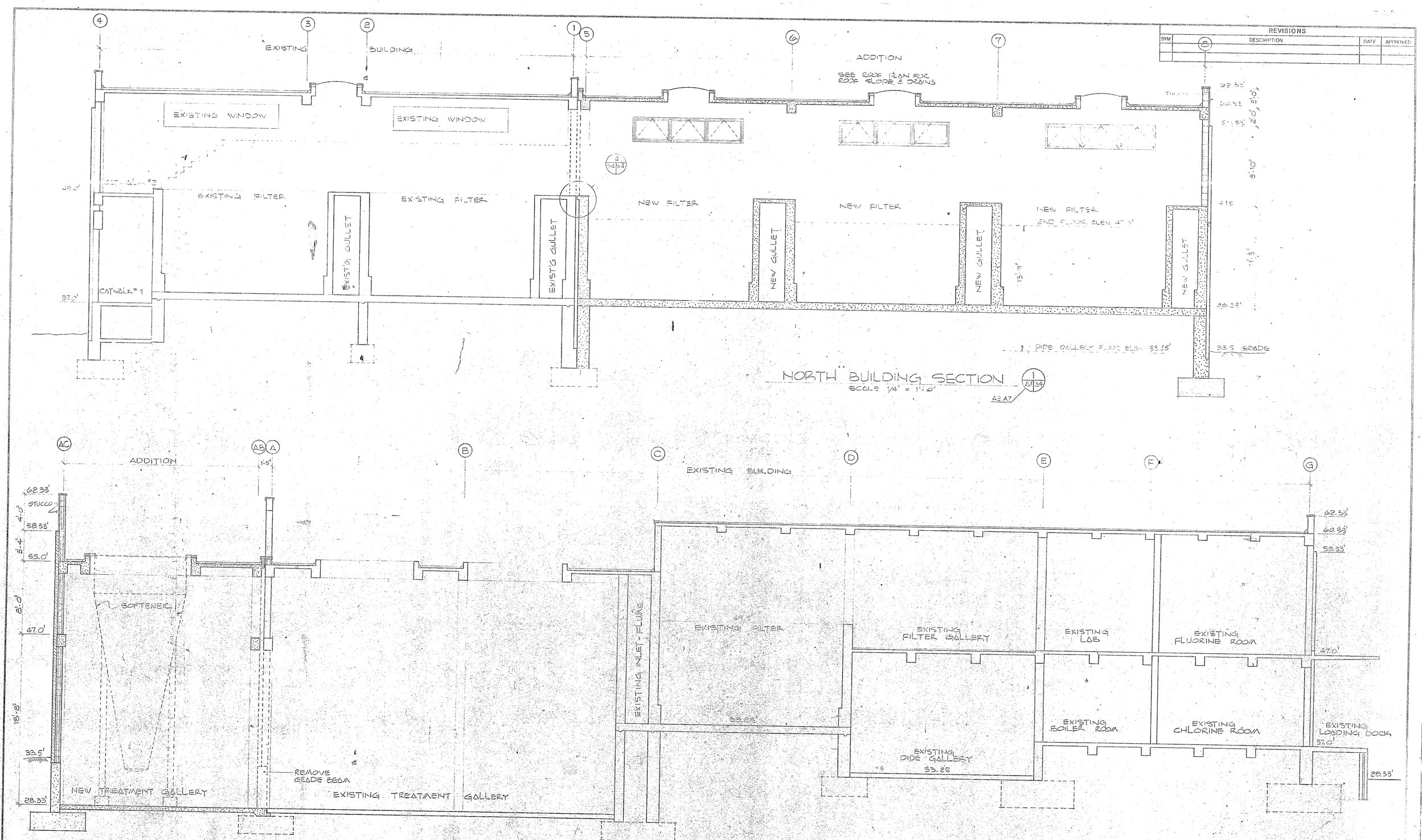
DES. JRB | DR JVD | CHK JRB
PROJ. MGR. JRB CH ENGR JRB
SUBMITTED BY DATE 7/2/84
FIRM MEMBER PRINCIPAL
EFD/FP-TPMC REVD
HD DIR
APPROVED DATE
ACTIVITY ENGINEER DATE
APPROVAL DATE

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VIRGINIA

CAMP LEJEUNE NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD
WATER TREATMENT PLANT

TREATMENT PLANT ELEVATIONS

SIZE F | CODE IDENT NO. 80091 | NAVFAC DRAWING NO. 4107
JOB NO. N62470-81-B-164
05-81-1642 | SHEET 10 OF 7
EFD DWG NO.




| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |

A-4

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DES. JRA | DR JWD | CHK JRE
PROJ. MGR. JRB CH. ENGR. JRB
SUBMITTED BY DATE 7/12/84
FIRM MEMBER PRINCIPAL
EFD PP TRAF RVD
HD DIR KRA
APPROVED DATE 7/12/84
ACTIVITY - SATISFACTORY TO
APPROVED DATE
FOR EFD FOR COMMANDER NAVFAC

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 4631 JOHN R. ANDERSON

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VIRGINIA
CAMP LEJEUNE NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
TREATMENT PLANT - BUILDING SECTIONS

| SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 4107544 |
| | | CONSTR. CONTR. NO. N62470-81-B-1644 |
| SCALE AS SHOWN | SPEC. 05-81-1644 | SHEET 11 OF 74 |

EFD DWG NO. 207544

TYPICAL WALL CAP (MATCH EXISTING) SEE DETAIL A5/A7

62.33' (TOP OF MAS)

1" STUCCO ON METAL LATH

CONCRETE BEAM

4'-0"

TYPICAL CAP SEE DETAIL D A-5/A-7

OVER-FLOW SCUPPER SIMILAR TO DETAIL G A-7/A-7

55.33' TYPICAL BRICK SOLDIER COURSE

1½" REINF CONC. WEARING SURFACE

B.U. ROOF

ATL. FLASHING SEE DETAIL C A5/A7

3'-4"

55.0' (ROOF ELEV. @ PERIMETER)

WATER SOFTNING EQUIPMENT

8'-0"

47.0' (BEAM ELEV.)

MATCH EXISTING BRICK

8" CONCRETE MASONRY UNITS W/ CONT. GALV. WALL TIES @ 16" O.C. VERT.

14'-0"

NEW COLUMN BEYOND

NEW COLUMN BEYOND

KAIL DETAIL SEE SHEET A-1

33.00

D A-5/A-5

APPROX. GRADE 33.0

(GRADE BEAM) 33.0'

TWO PLY FABRIC REINFORCING

1½" PROTECTION COURSE

3 PLY BITUMINUS MEMBRANE WATER PROOFING

NEW GRADE BEAM

CONC. STAIR (SEE SHT. A1 & S1) 10 RISERS @ 6 3/8" 9 TREADS @ 11"

EXPANSION JOINT MATERIAL

WATERSTOP

5" CONC. SLAB

28.33' (TREATMENT FL.)

27.5' (TOP OF FTG)

TWO PLY FABRIC REINFORCING

4" LAYER GRAVEL & VAPOR BARRIER

NEW PILE CAP

EXISTING STUCCO

EXIST. CONC. BEAM

REMOVE EXIST BRICK & BLOCK SEE SHEET S-2 DET. 4 S-2/S-2 & 2 A-1/A-4

CUT EXIST BASE FLASHING AT TOP OF NEW CURB ELEV.

TREATED WD. BLOCKING

EXP. JT. MAT.

ATL. FLASHING @ CURB E A5/A5

SEE E A5/A5

REMOVE EXIST. BRICK & BLOCK

ADDITION

EXISTING BUILDING

EXISTING COLUMN BEYOND

NEW COLUMN BEYOND

NOTE - EXISTING WALLS ARE 12" THICK (4" BRICK + 8" B.L.K.)

REMOVE EXISTING PLASTIC GRADE BEAM

EXISTING STUCCO

EXIST CONC BEAM

EXIST CMU

REMOVE EXIST BRICK

ATL. FLASHING @ CURB A A5/A5

REMOVE EXIST BRICK & BLOCK

ADDITION

EXISTING BUILDING

REMOVE EXIST 12" BRICK & BLOCK WALL

EXISTING COLUMN BEYOND

NEW COLUMN BEYOND

EXISTING COLUMN BEYOND

37.5' (1ST FLOOR ELEV)

2 A5/S1 SEE DETAIL SIMILAR

SECTION 1 A1/A5 — TYPICAL WALL A2, A7

SECTION 2 A1/A5 — ROOF CONN. W/O PARAPET A2, A7

SECTION 3 A1/A5 — ROOF CONN. W/ PARAPET

TREATMENT GALLERY WALL SECTIONS

SCALE 3/4" = 1'-0"

CAST ALUMINUM SAFETY NOSING 3/8" THICK WITH ABRASIVE AGGREGATE CAST INTEGRAL WITH WEARING SURFACE

STEEL ANCHORS @ 12" O.C. EMBED IN CONC.

SAFETY NOSINGS 4" WIDE & FULL LENGTH OF EA. TREAD LANDINGS & FLOOR EDGE

REINF. CONC. STEP, LANDINGS & FLOOR

D A5/A5 — 4" SAFETY TREAD (TYPICAL ALL STEPS)

METAL WALL CAP (NEW)

CONTIN METAL STRIP W/ NAILS AT 16" O.C.

TREATED WD BLOCKING

1/2"ø x 8" LONG W/ 2" HOOK ANCHOR BOLTS @ 24" O.C.

3 LAYERS B.U. FLASHING

REINF CONC WEARING SURFACE

B.U. ROOF

CONC. DECK

4" CANT

REMOVE EXIST BRICK & BLK

NEW TREATED WOOD BLOCKING

CUT EXIST. BASE FLASHING AT TOP OF NEW CURB

EXIST. ROOF CONSTRUCTION

NEW EXP. JT. W/ MATERIAL

NEW ADDITION

EXISTING BLDG

E A5/A5 — EXPANSION JT. & CURB DET.

SCALE 3/4" = 1'-0"

REVISIONS

| SYM | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|

MENRY, VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

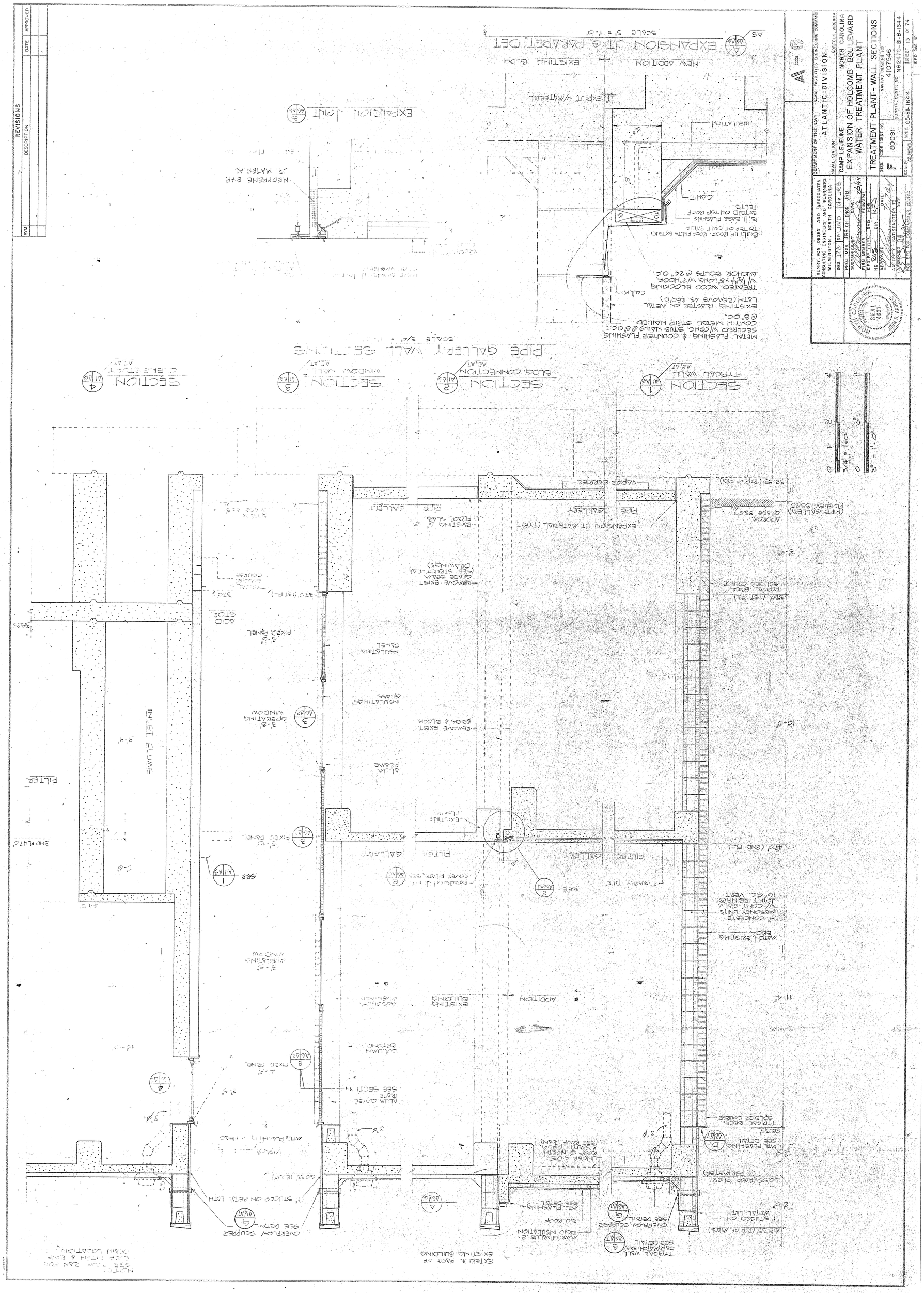
DES. JEA JOR JWD CHK. JRG
PROJ. MGR. JRB CH. ENGR. JRB
SUBMITTED BY: DATE
APPROVED BY: DATE
ID. DAS DATE
ACTIVITY - SATISFACTORY TO
FOR EFD FOR COMPUTER INPUT DATE

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION
ATLANTIC DIVISION
NORFOLK, VIRGINIA

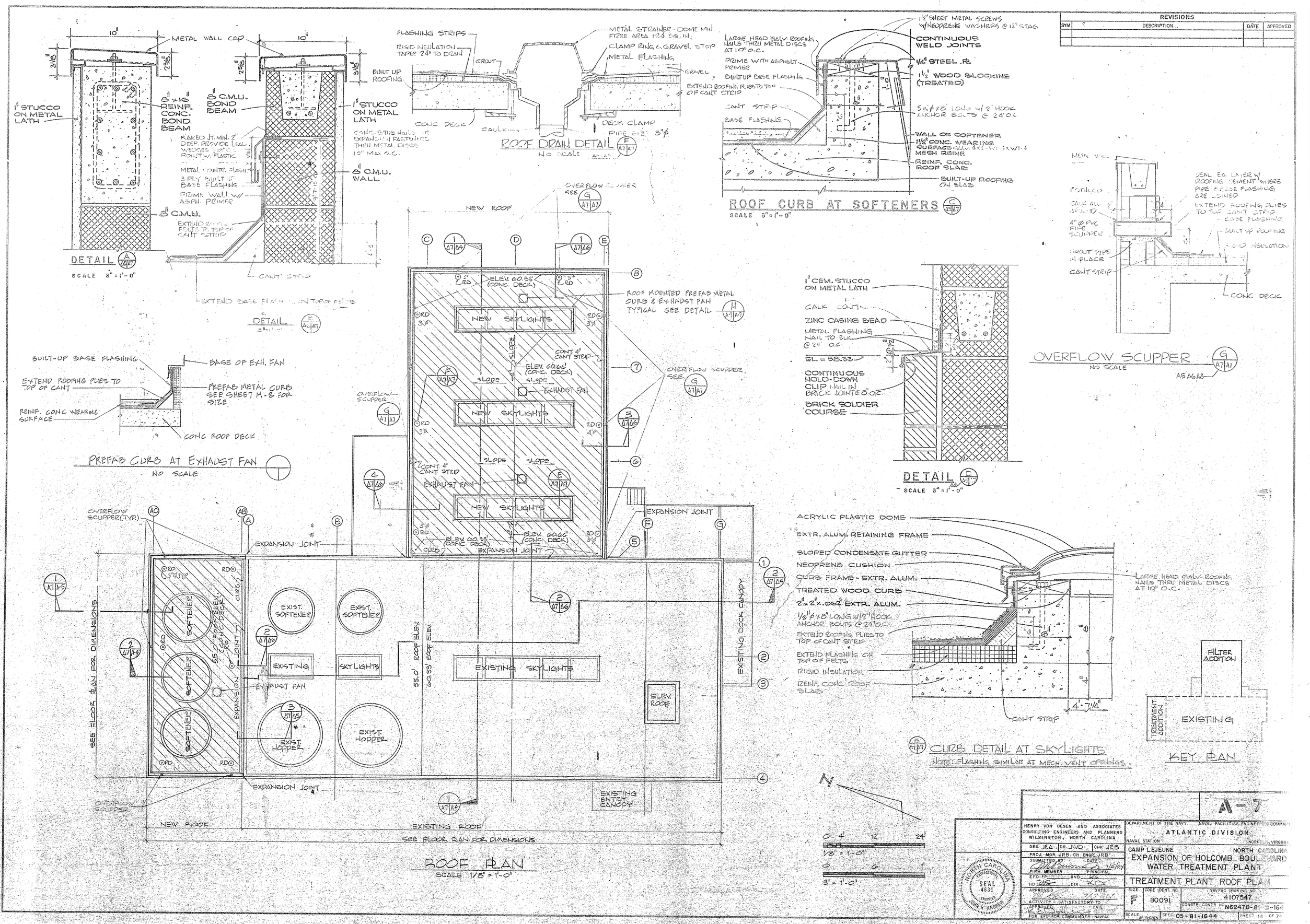
CAMP LEJEUNE NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
TREATMENT PLANT - WALL SECTIONS

SITE F
FORE UNIT NO. 80091
NAVFAC DRAWING NO. 4107545
CONTR. CONTR. NO. N62470-81-B-1644
SCALE: 3/4" = 1'-0"
SPEC. 05-81-1644
SHEET 12 OF 74
EFD DWG NO. 20

A-5


REVISIONS
SYM
DESCRIPTION
DATE
APPROVED
EXPANSION JT @ PARAPET DET
SCALE 3" = 1'-0"
NEW ADDITION
EXISTING BLDG
EXPANSION JOINT
NEOPRENE EXP JT MATERIAL
SECTION
PIPE GALLERY WALL SECTIONS
SCALE 3/4" = 1'-0"
METAL FLASHING & COUNTER FLASHING SECURED W/CONC. STUB NAILS @ 8" O.C.; CONTIN METAL STRIP NAILED @ 8" O.C.
EXISTING PLASTER ON METAL LATH (REMOVE AS REQ'D)
TREATED WOOD BLOCKING W/ 1/2"x8" LONG W/ 7" HOOK ANCHOR BOLTS @ 24" O.C.
CAULK
CANT
INSULATION
EXP JT W/MATERIAL
BLDG CONNECTION
WINDOW WALL
CLERE STORY
TYPICAL WALL
PIPE GALLERY
EXPANSION JT MATERIAL (TYP)
VAPOR BARRIER
FILTER GALLERY
FILTER
INLET FLUME
ACID STOR
FIXED PANEL
REMOVE EXIST GLASS & BLOCK
OPERATING WINDOW
ALUM FLUME
EXISTING BUILDING
ADDITION
ALUM COVER PLATE SEE SECTION
OVERFLOW SCUPPER SEE DETAIL
STUCCO ON METAL LATH
TYPICAL WALL CAP (MATCH EXS) SEE DETAIL
OVERFLOW SCUPPER SEE DETAIL
MTL FLASHING SEE DETAIL
TYPICAL BLOCK SPLIT FACE COURSE
EXTERIOR FACE OF EXISTING BUILDING
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NORFOLK, VIRGINIA
NAVAL STATION
CAMP LEJEUNE
NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD
WATER TREATMENT PLANT
TREATMENT PLANT - WALL SECTIONS
CODE IDENT. NO. 80091
NAVFAC DRAWING NO. 4107546
CONTR. CONTR. NO. N62470-81-B-1644
SHEET 13 OF 74
SPEC. 05-81-1644
HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA
PROJ. MGR. JRB
DES. JRA
DR. JVD
CHK. JRB
EFD PROJECT MANAGER
REVIEWED
APPROVED
CERTIFICATE OF SATISFACTORY COMPLETION
DATE
SCALE
SCHEDULE
SHEET
EFD DWG NO.

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |




A-7

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DES. JRB DR. JVD CHK. JRB
PROJ. MGR. JRB CH. ENGR. JRB
SUBMITTED BY DATE
FIRM MEMBER PRINCIPAL
EFD FP RVD
HD DIR
APPROVED DATE
ACTIVITY - SATISFACTORY TO
APPROVED DATE
FOR EFD FOR COMMANDER, NAVFAC

NORTH CAROLINA PROFESSIONAL SEAL 4631 ENGINEER JOHN R. ANDREW

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VIRGINIA

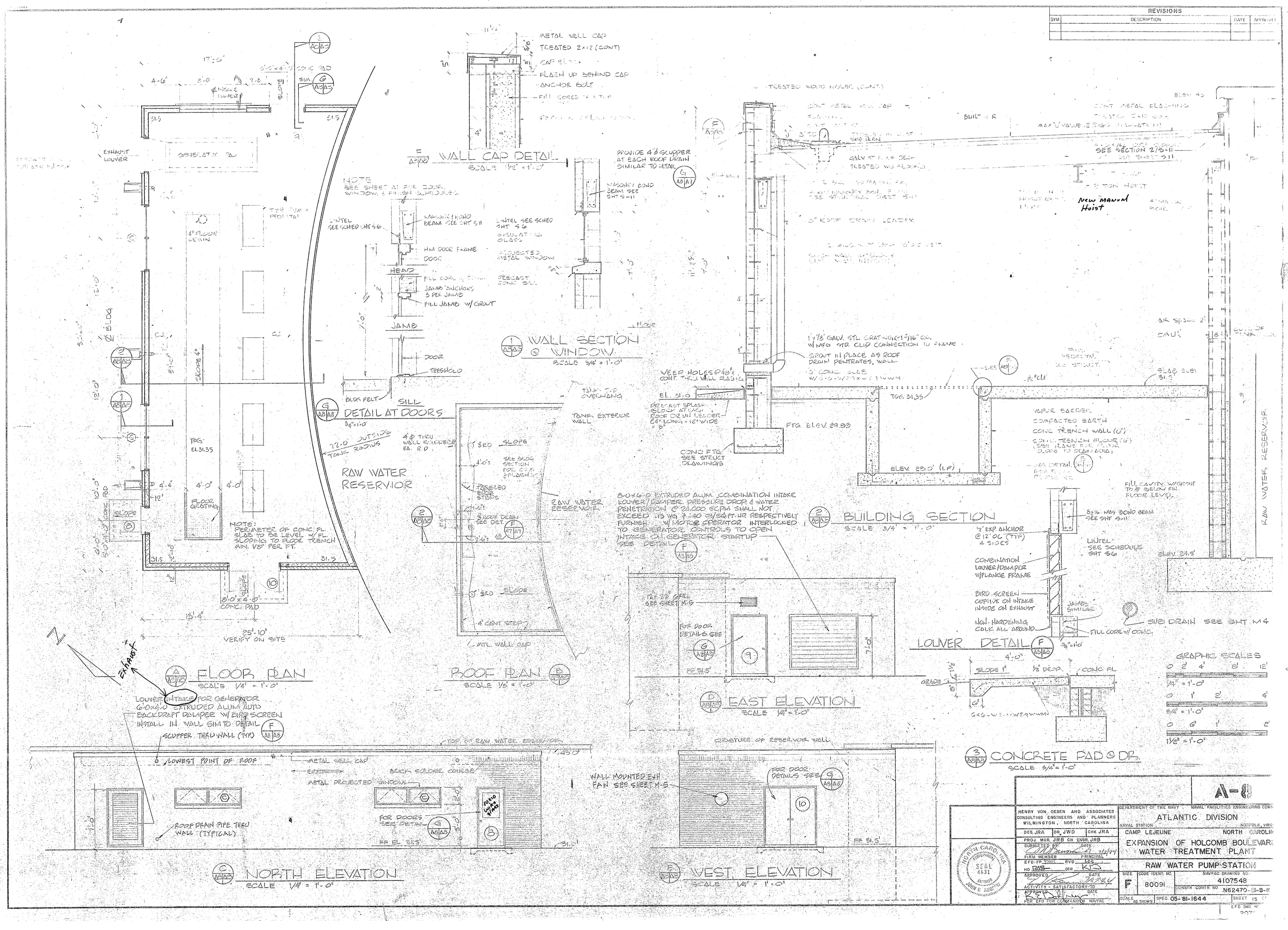
CAMP LEJEUNE NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

TREATMENT PLANT ROOF PLAN

| SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 4107547 |
| SCALE AS SHOWN | SPEC. 05-81-1644 | CONSTR. CONTR. NO. N62470-81-B-1644 |
| | | SHEET 16 OF 74 |

CODE NO. 20754

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |




A-8

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DES. JRA | DR. JWD | CHK JRA
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY | DATE 7/2/84
FIRM MEMBER | PRINCIPAL
EFD: FP | RVD. LES
HD | DIR. KD
APPROVED | DATE
ACTIVITY - SATISFACTORY TO
APPROVED | DATE
FOR EFD FOR COMMANDER NAVFAC

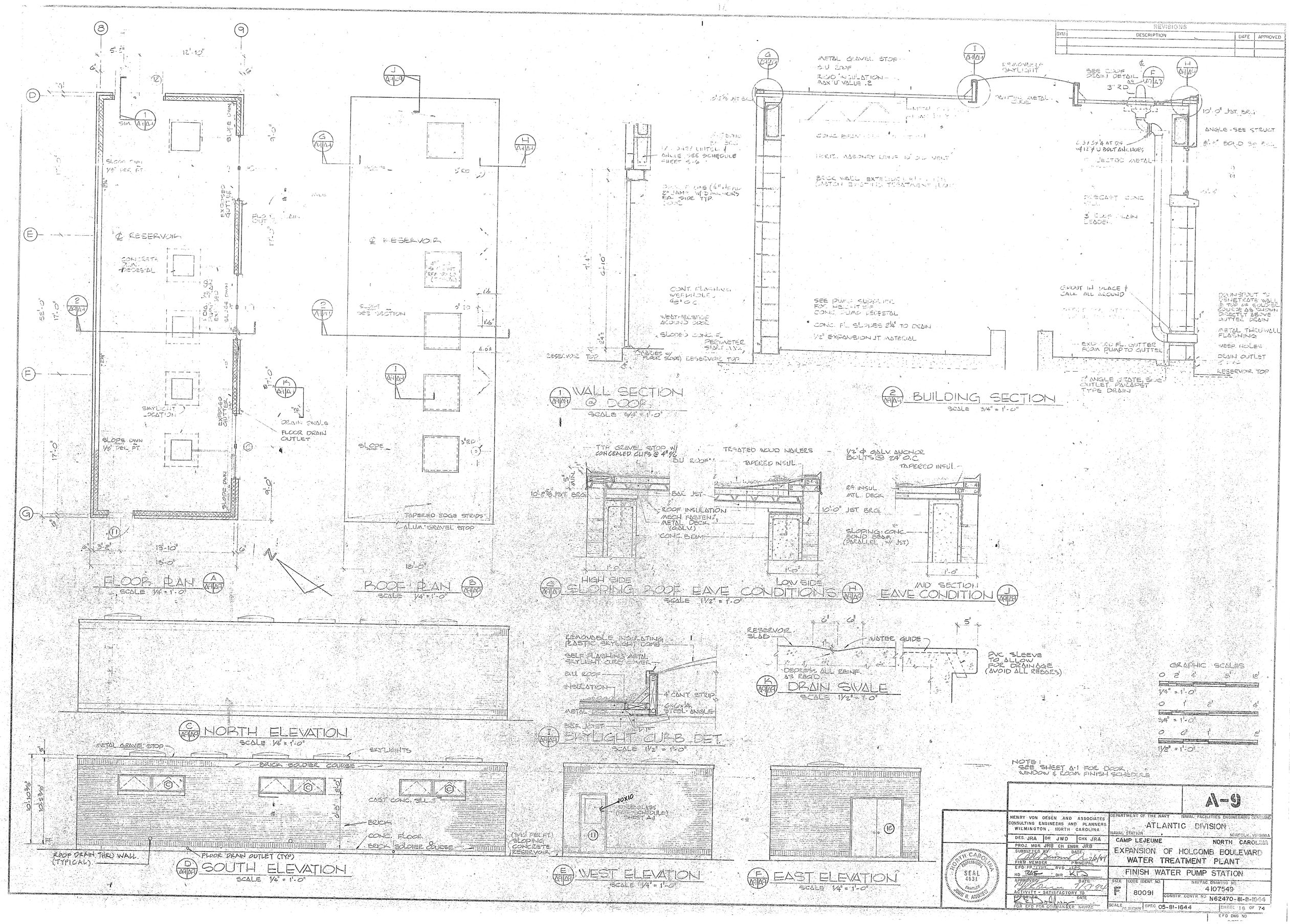
NORTH CAROLINA REGISTERED SEAL 4631 ENGINEER JOHN R. ABERNETHY

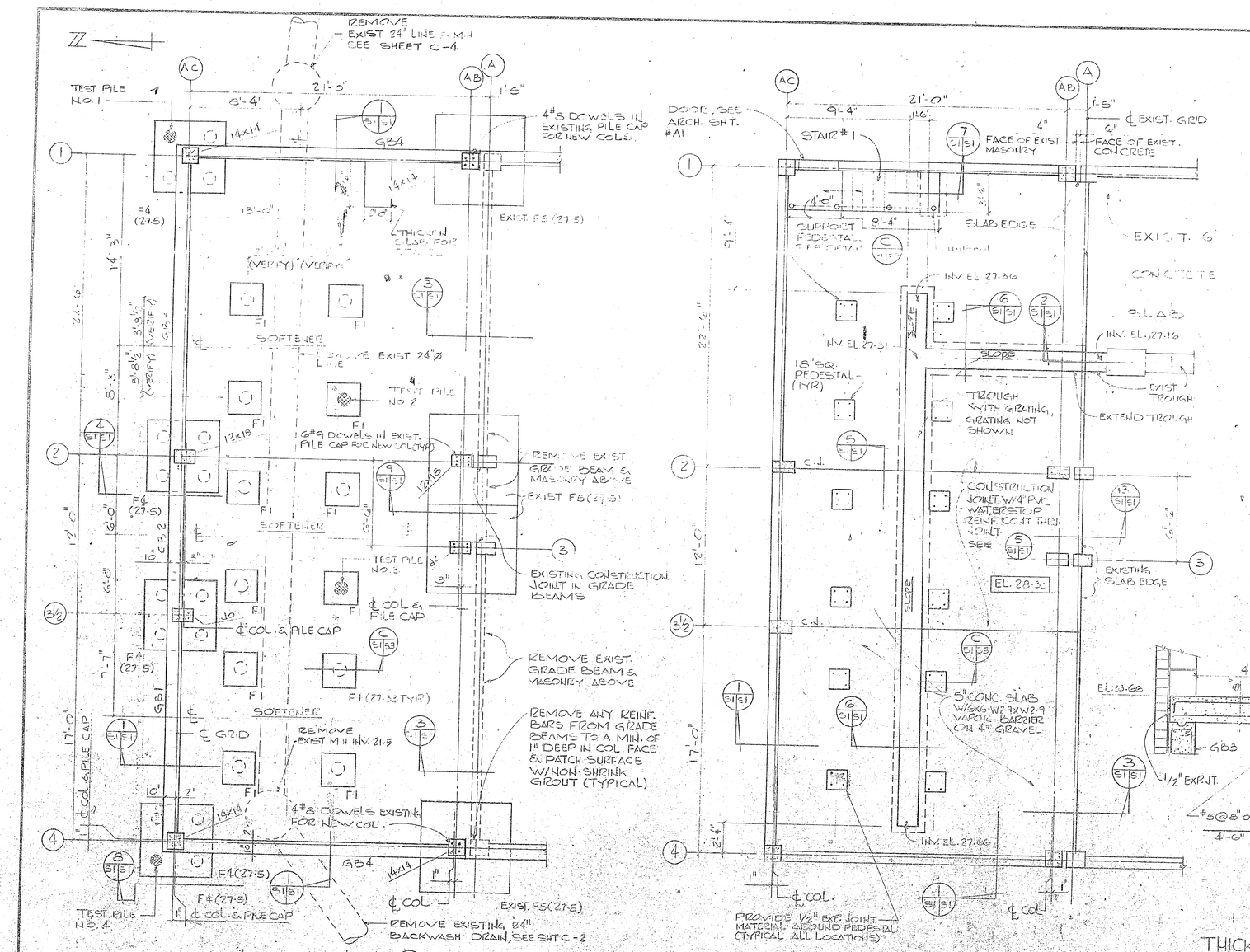
DEPARTMENT OF THE NAVY | NAVAL FACILITIES ENGINEERING COMM.
NAVAL STATION ATLANTIC DIVISION NORFOLK, VIRG.
CAMP LEJEUNE NORTH CAROLIN
EXPANSION OF HOLCOMB BOULEVAR
WATER TREATMENT PLANT
RAW WATER PUMP STATION

| SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 4107548 |
| SCALE AS SHOWN | SPEC. 05-81-1644 | CONSTR. CONTR. NO. N62470-81-B-1 |
| | | SHEET 15 OF |

EFD DWG NO. 207

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |






FOUNDATION PLAN (A/S1/S1) 1/4" = 1'-0"

FIRST FLOOR PLAN (B/S1/S1) 1/4" = 1'-0"

THICKENED SLAB DETAIL & STAIR NO. 1 (7/S1/S1) 3/4" = 1'-0"

| SLAB SCHEDULE | | | | |
|---|---|---|---|---|
| MARK | DEPTH | REINFORCING BOTTOM | REINFORCING TOP | REINFORCING TEMP (BOT.) | REMARKS |
| S21 | 4" | #4 @ 12 O.C. | #4 @ 12 O.C. | #3 @ 15 O.C. | |
| S22 | 4" | do | do | do | |
| S23 | 4" | do | do | do | |
| S24 | 4" | do | do | do | |
| S25 @ 26 | 8" | #5 @ 5 O.C. | #5 @ 5 O.C. | #4 @ 12 O.C. | |
| S27 | 8" | #6 @ 4 O.C. | #6 @ 4 O.C. | do | |
| S28 | 6" | #4 @ 4 O.C. | #4 @ 4 O.C. | #4 @ 5 O.C. | |
| S31 | 4" | #4 @ 12 O.C. | #4 @ 12 O.C. | #3 @ 15 O.C. | |
| S32 | 4" | do | do | do | |
| [illegible] | [illegible] | | | | |
| S34 | 4" | do | do | do | |
| S35 | 4" | do | do | do | |
| S36 | 4" | do | do | do | |
| S37 | 6" | do | do | #4 @ 12 O.C. | |
| S38 | 6" | #4 @ 12 O.C. | #4 @ 12 O.C. | #4 @ 12 O.C. | |

| GRADE BEAM SCHEDULE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| MARK | SIZE W | SIZE D | REINFORCING BOT | REINFORCING TOP | REINFORCING TOP 1ST JOINT | HORZ. WALL REINF. INSIDE FACE | HORZ. WALL REINF. OUT FACE | DOWELS TO CAP | REMARKS |
| GB1 | 12 | 66 | 3#8 | 2#8 | 3#8 | 2#8 #4@12 | #4@12 | 4#8 | #4@12 VERT. EF |
| GB2 | 12 | 66 | do | do | do | do | do | do | do |
| GB3 | 12 | 66 | do | do | do | do | do | do | do |
| GB4 | 12 | 66 | do | do | do | do | do | do | do |
| GB5 | 8/12 | 56 | 2#7 1#6 | 2#8 | 1#8 | — | #4@12* | 4#6 | #4@12 TIES |
| GB6 | 8/12 | 56 | do | do | do | — | do | do | do |
| GB7 GB8 GB9 | 8 | (VARIES) | 2#7 | 2#9 | — | — | (TYP. EET) | do | do |
| GB8 | 8/12 | 48 | 2#9 | 2#9 | 2#7 TYP. | — | do | do | do |
| GB9 | 12 | 56 | 2#7 | 2#7 | — | — | do | do | do |
| GB10 | 8/12 | 56 | 2#7 | 2#6 | 2#6 BOT. | — | #4@12* | 3#6 | #4@12 TIES |

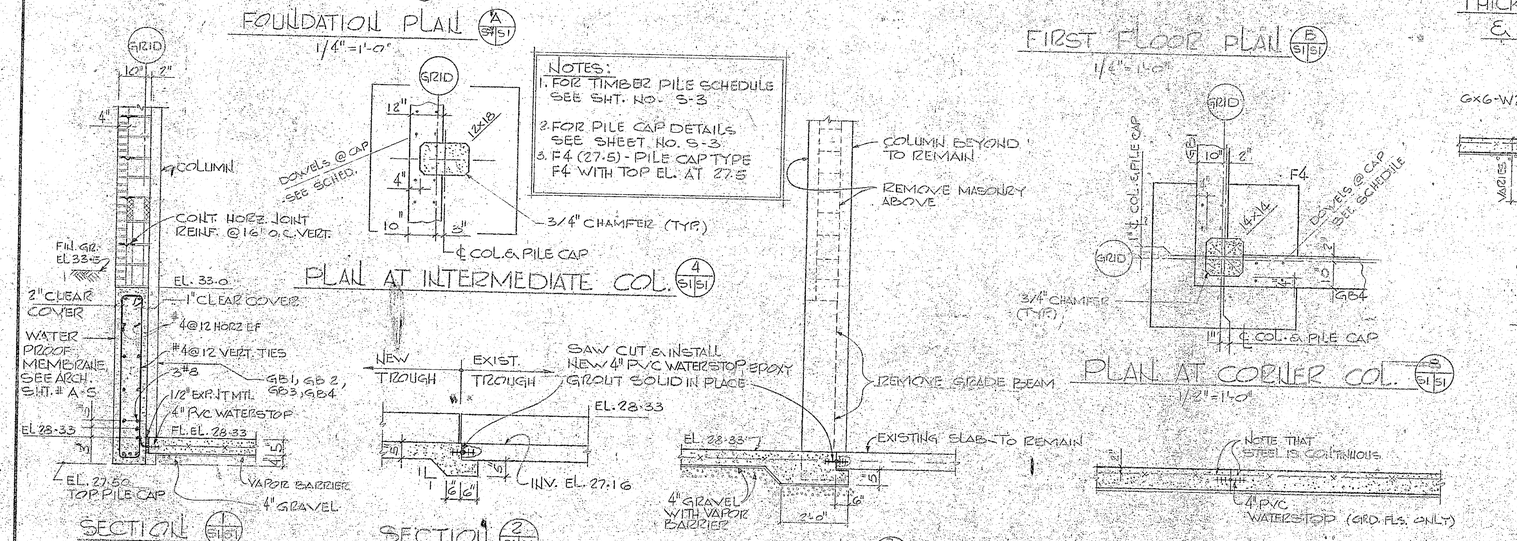
* ADD 2#4 EA. SIDE

| HEADER, BEAM & GIRDER SCHEDULE | | | | | | | |
|---|---|---|---|---|---|---|---|
| SIZE | SIZE W | SIZE D | REINFORCING LONGITUDINAL BOT. | REINFORCING LONGITUDINAL TOP | REINFORCING LONGITUDINAL TOP 1ST JOINT | REINFORCING STIRRUPS/TIES SIZE | REINFORCING STIRRUPS/TIES TYPE | REINFORCING STIRRUPS/TIES SPACING |
| G21 | 12 | 16 | 5#4 | — | #6 | #3 | ⊓ | 1@2" 11@7" |
| G22 | 12 | 24 | 5#6 | — | 4#4 | #3 | ⊓ | 1@2" 7@7" |
| G23 | 12 | 24 | 3#10 2#9 | — | 2#5 2#4 | #3 | ⊔ | 1@2" 7@7" |
| G31 | 12 | 16 | 2#5 2#7 | — | 1#6 4#6 | #3 | ⊓ | 1@2" 10@7" |
| G32 | 12 | 16 | 2#5 3#6 | — | 2#7 3#6 | #3 | ⊓ | 1@2" 12@7" |
| G33 | 12 | 16 | 5#5 | 1#5 1#6 | 2#6 2#7 | #3 | ⊓ | 1@2" 5@7" |
| [illegible] | 12 | 24 | 3#8 2#6 | 3#4 2#4 #4 | 3#4 | #3 | ⊔ | 1@2" 7@7" 5@12" |
| G41 | 8 | 16 | 3#4 | — | 2#4 | #3 | ⊓ | 1@2" 12@12" |
| B21 | 12 | 16 | 5#4 | 2#5 2#6 | 3#5 2#4 | #3 | ⊓ | 1@2" 12@7" |
| B22 | 12 | 16 | 5#4 | 5#4 | — | #3 | ⊓ | 1@2" REM@12" |
| B23 | 12 | 16 | 5#4 | 5#4 | 3#5 2#4 | #3 | ⊓ | 1@2" 12@7" |
| B24 | 12 | 16 | 1#8 5#7 | 4#8 | 2#5 | #3 | ⊔ | 1@2" 22@7" |
| B25 | 12 | 16 | 2#4 3#5 | 4#8 | — | #3 | ⊔ | 1@2" 10@7" |
| B26 | 12 | 16 | 5#5 | 2#8 1#7 | 2#5 2#7 | #3 | ⊓ | 1@2" 10@7" |
| B27 | 12 | 16 | 2#4 2#5 | do | — | #3 | ⊓ | do |
| B31 | 12 | 16 | 5#4 | 2#4 3#5 | 2#4 2#5 | #3 | ⊓ | 1@2" 5" REM. 14" |
| B32 | 12 | 16 | 2#4 | 5#4 | — | #3 | ⊓ | 1@2" REM@12" |
| B33 | 12 | 16 | 5#4 | 2#4 3#5 | 2#4 2#5 | #3 | ⊓ | 1@2" 5@7" REM@16" |
| B34 | 12 | 16 | 3#7 2#5 | 2#5 5#4 | 2#5 | #3 | ⊔ | 1@2" 3@7" REM@14" |
| B35 | 12 | 16 | 2#6 | 2#5 2#6 | — | #3 | ⊔ | 1@2" REM@12" |
| B36 | 12 | 16 | 4#5 | 3#4 | 2#5 | #3 | ⊔ | 1@2" 1@7" REM@12" |
| B37 | 12 | 16 | 5#4 | 5#5 | 5#4 | #3 | ⊓ | 1@2" 12@7" |
| B38 | 12 | 16 | 2#4 | 5#5 | — | #3 | ⊓ | 1@2" REM@16" |
| B39 | 12 | 16 | 5#4 | 5#5 | 5#4 | #3 | ⊓ | 1@2" 12@7" |
| B310 | 12 | 16 | 4#4 | 5#4 | 2#4 1#5 | #3 | ⊓ | 1@2" REM@14" |
| B311 | 12 | 16 | 5#5 | 2#5 2#7 | 2#4 1#5 | #3 | ⊔ | 1@2" 12@7" REM@16" |
| B41 | 8 | 16 | 3#4 | 3#4 | 3#4 | #3 | ⊓ | 1@2" REM@12" |
| B42 | 8 | 16 | do | do | — | #3 | ⊓ | do |
| B43 | 12 | 12 | 2#5 | — | 2#4 | #3 | ⊓ | 1@2" REM@10" |
| B44 | 10 | 14 | 2#6 | — | 2#5 | #3 | ⊓ | do |
| B45 | 16 | 12 | 5#7 | — | 2#5 | #3 | ⊓ | 1@2" REM@6" |
| B46 | 10 | 14 | | | | | | |
| H31 | 8 | 12 | 2#6 | — | 2#4 | #3 | ⊔ | 1@2" REM@12" |

**3 LOWS

* ADD 2#4 EA. SIDE

| REVISIONS | | | |
|---|---|---|---|
| SYM. | DESCRIPTION | DATE | APPROV. |
| | | | |




PLAN AT INTERMEDIATE COL. (4/S1/S1) 1/2" = 1'-0"

PLAN AT CORNER COL. (3/S1/S1) 1/2" = 1'-0"

SECTION (1/S1/S1) 1/2" = 1'-0"

SECTION (2/S1/S1) 1/2" = 1'-0"

SECTION (3/S1/S1) 1/2" = 1'-0"

SLAB CONSTRUCTION JOINT (5/S1/S1) 3/4" = 1'-0" (C.J.)

SECTION (6/S1/S1) 1/2" = 1'-0"

SECTION (9/S1/S1) 1/2" = 1'-0"

KEY PLAN

GRAPHIC SCALES

S-1

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

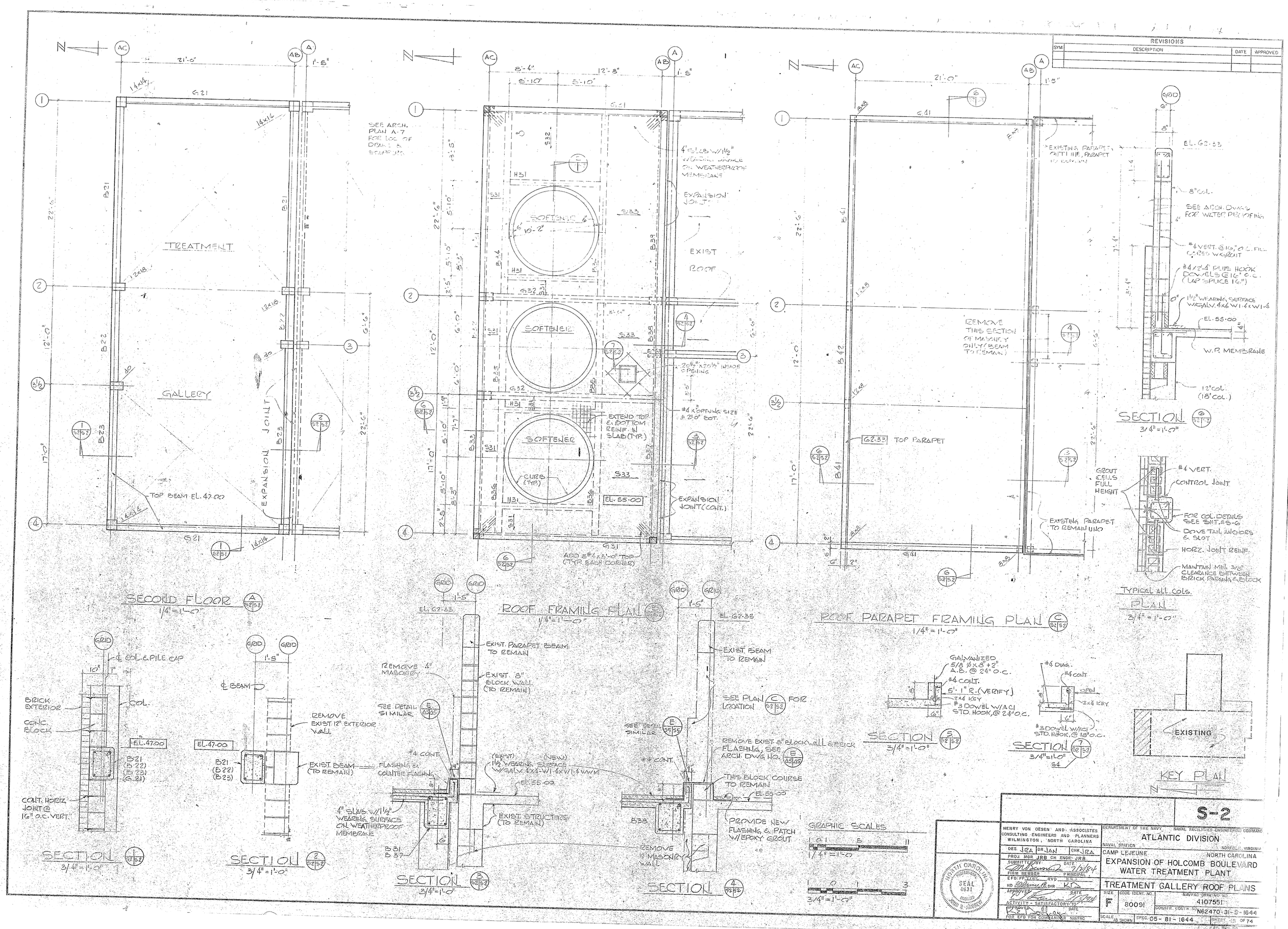
DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA
CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
TREATMENT GALLERY FDN. PLAN

DES. JCA DR. JAN CHK. JCA
PROJ. MGR. JRB CH. ENGR. JRB
SUBMITTED BY: DATE 7/1/84
FIRM MEMBER — PRINCIPAL
EFD:FP: RVD — RIC
HD DIR KD
APPROVED DATE 7/5/84
ACTIVITY - SATISFACTORY TO
APPROVED DATE
FOR EFD. FOR COMMANDER NAVFAC

SIZE F — CODE IDENT. NO. 80091 — NAVFAC DRAWING NO. 4-107550
CONTR. CONTR. NO. N62470-81-B-1844
SCALE AS SHOWN — SPEC 05-81-1644 — SHEET 17 OF 74
EFD DWG. 207280

NORTH CAROLINA PROFESSIONAL SEAL 4631 JOHN R. ANDERSON

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |




S-2

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DES. JRA DR. JAN CHK. JRA
PROJ. MGR. JRB CH. ENGR. JRB
SUBMITTED BY
FIRM MEMBER PRINCIPAL
EFD: FR RVD
HD DIR
APPROVED DATE
ACTIVITY - SATISFACTORY TO
APPROVED DATE
FOR EFD FOR COMMANDER NAVFAC

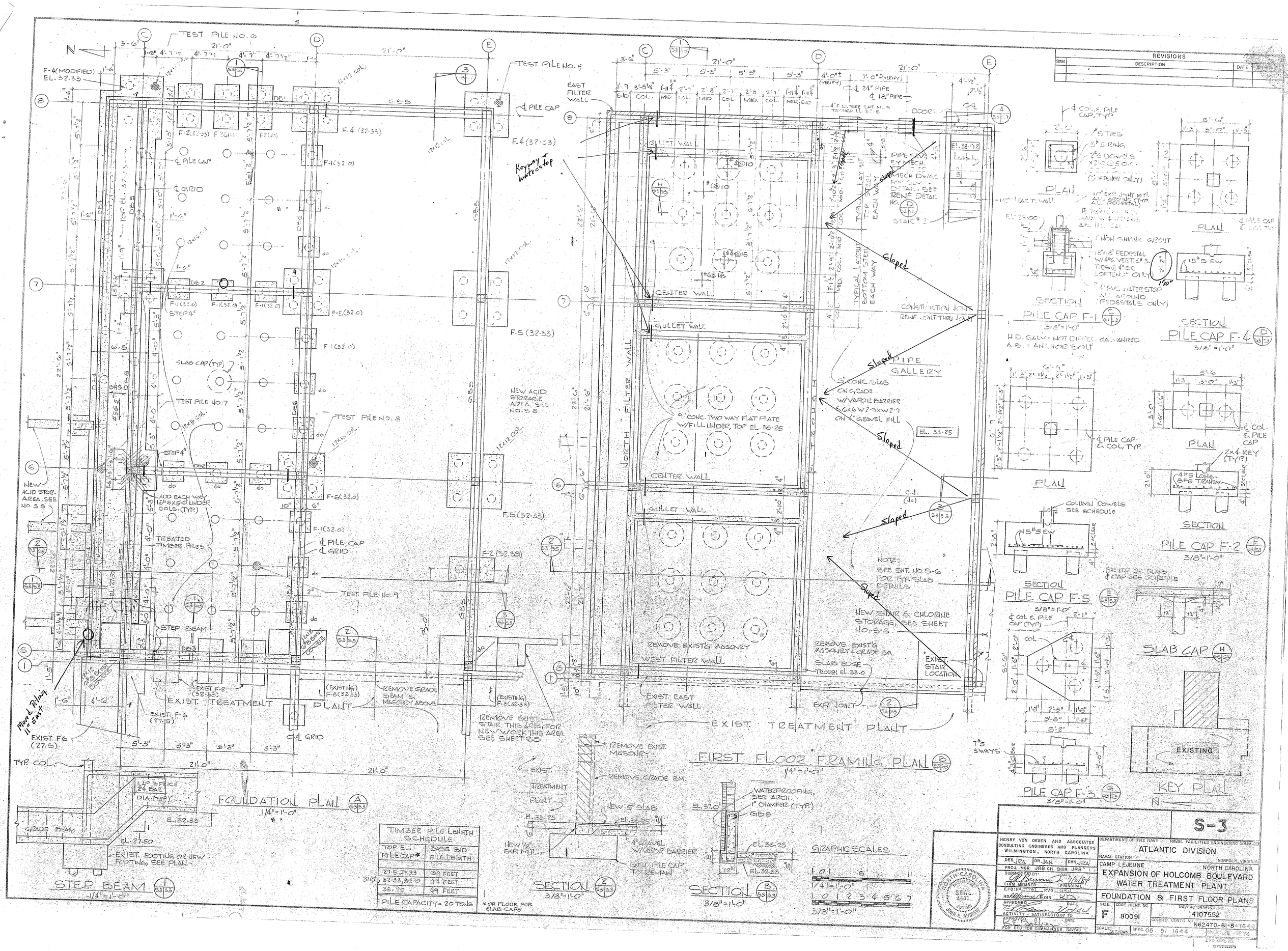
NORTH CAROLINA REGISTERED SEAL 4631 ENGINEER JOHN B. HARDEN

DEPARTMENT OF THE NAVY, NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VIRGINIA
CAMP LEJEUNE NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
TREATMENT GALLERY ROOF PLANS

| SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 4107551 |
| SCALE AS SHOWN | SPEC. 05-81-1644 | CONTR. CONTR. NO. N62470-81-B-1644 |

SHEET 15 OF 74

FEB 1984
207531


TEST PILE NO. 6
TEST PILE NO. 5
TEST PILE NO. 7
TEST PILE NO. 8
TEST PILE NO. 9
F-4 (MODIFIED) EL. 32.33
EAST FILTER WALL
GULLET WALL
CENTER WALL
WEST FILTER WALL
NORTH FILTER WALL
Keyway + waterstop
Sloped
PIPE GALLERY
5" CONC. SLAB ON GRADE W/VAPOR BARRIER 6x6 W2.9xW2.9 ON 4" GRAVEL FILL
9" CONC. TWO WAY FLAT PLATE W/FILL UNDER, TOP EL. 33.25
EL. 33.25
NEW ACID STORAGE AREA, SEE NO. S-8
SLAB CAP (TYP)
TREATED TIMBER PILES
STEP BEAM
EXIST. TREATMENT PLANT
REMOVE GRADE BEAM & MASONRY ABOVE
REMOVE EXIST. STAIR THIS AREA, FOR NEW WORK THIS AREA SEE SHEET S-5
REMOVE EXIST. MASONRY
REMOVE EXIST'G MASONRY & GRADE BM
SLAB EDGE TROUGH EL. 33.0
EXIST. STAIR LOCATION
NEW STAIR & CHLORINE STORAGE, SEE SHEET NO. S-5
NOTE: SEE SHT. NO. S-6 FOR TYP. SLAB DETAILS
CONSTRUCTION JOINT
REINF. JOINT THRU JOINT
C.J. (do)
EXP. JOINT
EXIST. EAST FILTER WALL
Move & Plinth 11" EAST
EXIST. F-6 (27.5)
EXIST. F-6 (27.15)
EXIST. F-2 (32.33)
(EXISTING) F-6 (32.33)
TYP. COL.
LAP SPLICE 24 BAR DIA. (TYP)
GRADE BEAM
EL. 27.50
EXIST. FOOTING OR NEW FOOTING, SEE PLAN
FOUNDATION PLAN 1/4"=1'-0"
STEP BEAM 1/4"=1'-0"
FIRST FLOOR FRAMING PLAN 1/4"=1'-0"
SECTION 3/8"=1'-0"
WATERPROOFING, SEE ARCH.
1" CHAMFER (TYP)
EXIST. PILE CAP TO REMAIN
4" GRAVEL W/VAPOR BARRIER
NEW 1/2" EXP. MTL.
NEW 5" SLAB
REMOVE EXIST. MASONRY
REMOVE GRADE BM.
EXIST. TREATMENT PLANT
GRAPHIC SCALES
1/4"=1'-0"
3/8"=1'-0"
PILE CAP F-1 3/8"=1'-0"
PILE CAP F-4 3/8"=1'-0"
PILE CAP F-2 3/8"=1'-0"
PILE CAP F-5 3/8"=1'-0"
PILE CAP F-3 3/8"=1'-0"
SLAB CAP
KEY PLAN
PLAN
SECTION
1" NON SHRINK GROUT
12"x12" PEDESTAL W/4#6 VERT. & #3 TIES @ 4" O.C. SOFTENER ONLY
4" PVC WATERSTOP ALL AROUND (PEDESTALS ONLY)
15#5 EW
COLUMN DOWELS SEE SCHEDULE
FOR TOP OF SLAB & CAP SEE SCHEDULE
EXISTING
7#5 3 WAYS
TIMBER PILE LENGTH SCHEDULE
TOP EL. PILECAP* | BASE BID PILE LENGTH
27.5, 27.33 | 39 FEET
31.5, 32.33, 32.0 | 44 FEET
33.25 | 49 FEET
PILE CAPACITY = 20 TONS
*OR FLOOR FOR SLAB CAPS
REVISIONS
SYM | DESCRIPTION | DATE
HENRY VON OESEN AND ASSOCIATES CONSULTING ENGINEERS AND PLANNERS WILMINGTON, NORTH CAROLINA
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NORFOLK, VIRGINIA
CAMP LEJEUNE NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
FOUNDATION & FIRST FLOOR PLANS
S-3
SIZE F
CODE IDENT. NO. 80091
NAVFAC DRAWING NO. 4107552
CONTR. CONTR. NO. N62470-81-B-1644
SCALE AS SHOWN
SPEC. 05 91 1644
NORTH CAROLINA SEAL 4631 JOHN E. NIMMONS

| REVISIONS | | |
|---|---|---|
| SYM | DESCRIPTION | DATE |

FOUNDATION PLAN 1/4"=1'-0"

FIRST FLOOR FRAMING PLAN 1/4"=1'-0"

PILE CAP F-1 3/8"=1'-0"

SECTION PILE CAP F-4 3/8"=1'-0"

PILE CAP F-2 3/8"=1'-0"

SECTION PILE CAP F-5 3/8"=1'-0"

PILE CAP F-3 3/8"=1'-0"

SLAB CAP

KEY PLAN

STEP BEAM 1/4"=1'-0"

SECTION 3/8"=1'-0"

SECTION 3/8"=1'-0"

SECTION 3/8"=1'-0"

| TIMBER PILE LENGTH SCHEDULE | |
|---|---|
| TOP EL. PILE CAP* | BASE BID PILE LENGTH |
| 27.5, 27.33 | 39 FEET |
| 31.5, 32.33, 32.0 | 44 FEET |
| 33.25 | 49 FEET |

PILE CAPACITY = 20 TONS

*OR FLOOR FOR SLAB CAPS

S-3

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA

CAMP LEJEUNE — NORTH CAROLINA

EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

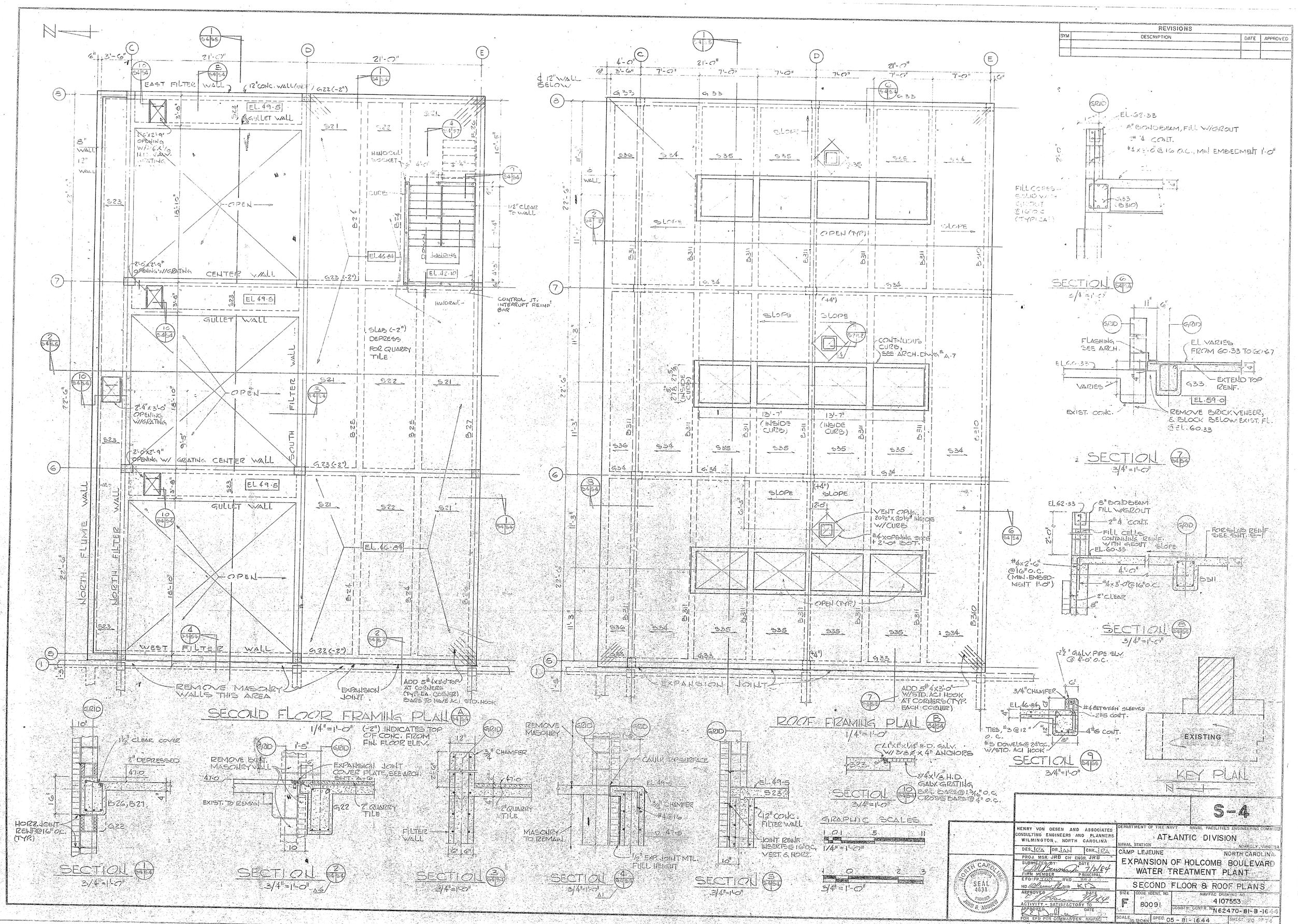
FOUNDATION & FIRST FLOOR PLANS

| SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 4107552 |

CONSTR. CONTR. NO. N62470-81-B-1644

SCALE: AS SHOWN — SPEC. 05 81 1644 — SHEET 19 OF 74

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |




| | | | |
|---|---|---|---|
| HENRY VON OESEN AND ASSOCIATES CONSULTING ENGINEERS AND PLANNERS WILMINGTON, NORTH CAROLINA | DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND | | |
| DES. JCA DR. JAN CHK. JCA | NAVAL STATION | ATLANTIC DIVISION | NORFOLK, VIRGINIA |
| PROJ. MGR. JRB CH. ENGR. JRB | CAMP LEJEUNE | | NORTH CAROLINA |
| SUBMITTED BY: DATE: 7/2/84 | EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT | | |
| FIRM MEMBER PRINCIPAL | | | |
| EFD: FP RVD SEC. | SECOND FLOOR & ROOF PLANS | | |
| HD DIR | | | |
| APPROVED DATE 7/2/84 | SIZE F | CODE IDENT. NO. 80091 | NAVFAC DRAWING NO. 4107553 |
| ACTIVITY - SATISFACTORY TO | | | |
| APPROVED DATE | SCALE AS SHOWN | SPEC. 05-81-1644 | CONTR. CONTR. NO. N62470-81-B-1644 |
| FOR EFD FOR COMMANDER, NAVFAC | | | SHEET 20 OF 74 |

NORTH CAROLINA PROFESSIONAL SEAL 4631 ENGINEER JOHN R. ANDERSON

S-4

EFD DWG. NO. 207553

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |

SECTION 1/33/S5 — 3/8" = 1'-0"

SECTION 2/33/S5 — 3/8" = 1'-0"

EAST, WEST & SOUTH FILTER WALL (DB1, DB3, DB6, DB7) — CENTER FILTER WALL (DB2)

TYPICAL WALL REINFORCING DETAILS E/S5/S5 — NO SCALE

GULLET WALLS

NORTH FLUME WALL DB4 — NORTH FILTER WALL DB5

PLAN COLUMN & WALL INTERSECTION B/S5/S5 — NO SCALE

NOTE: NO VERT. CONSTRUCTION JOINTS PERMITTED UNLESS INDICATED. FOR VERT. CONST. JOINT DETAIL SEE SHT. S-6

PLAN WALL CORNER & INTERSECTION A/S5/S5 — NO SCALE

TROUGH OPENING IN GULLET WALL C/S5/S5 — NO SCALE

PIPE OPENING DETAIL D/S5/S5 — NO SCALE

NOTE: TYP. ALL OPNGS

GRAPHIC SCALE 1 0 2 4 6 — 3/8" = 1'-0"

| | |
|---|---|
| HENRY VON OESEN AND ASSOCIATES CONSULTING ENGINEERS AND PLANNERS WILMINGTON, NORTH CAROLINA | DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND — ATLANTIC DIVISION — NAVAL STATION NORFOLK, VIRGINIA |
| DES JCA DR JAW CHK JCA | CAMP LEJEUNE NORTH CAROLINA |
| PROJ. MGR. JRB CH. ENGR. JRB | EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT |
| SUBMITTED BY: FIRM MEMBER / PRINCIPAL — DATE 7/21/84 | SECTIONS & DETAILS |
| EFD: FP RVD SR. I | SIZE F — CODE IDENT. NO. 80091 — NAVFAC DRAWING NO. 4107554 |
| HD DIR | CONSTR. CONTR. NO. N62470-81-B-1644 |
| APPROVED — DATE 7/23/84 | SCALE AS SHOWN — SPEC. 05-81-1644 — SHEET 2 OF 24 |
| ACTIVITY - SATISFACTORY TO | |
| APPROVED — DATE | |
| FOR EFD FOR COMMANDER, NAVFAC | |

NORTH CAROLINA PROFESSIONAL SEAL 4931 ENGINEER JOHN H. ARGUELLO

S-5

207554

# COLUMN SCHEDULE

| MARK (BY GRID LINE) | | 1AC 4AC | 2AC 3½AC | 1AB 4AB | 2AB 3AB | C5 C8 | C6 C7 | D5 D8 | D6 D7 | E5 E8 | E6 E7 | CO2 CL. STORAGE COLUMNS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TOTAL NO. COLS. | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 8 |
| PARAPET EL. 62.33 | SIZE | | | | | | | | | | | |
| | VERT. STEEL | | | | | | | | | | | |
| | TIES | | | | | | | | | | | |
| ROOF EL. 60.33 | SIZE | 8x8 | 12x8 | 8x8 | | | | | | | | |
| | VERT. STEEL | 4 #8 | 6 #8 | 4 #8 | | | | | | | | |
| | TIES | #3 | #3 | #3 | | | | | | | | |
| 2ND FL. EL. 47.0 | SIZE | 14x14 | 12x18 | 14x14 | 12x18 | 12x12 | 12x16 | 12x12 | 12x16 | 12x12 | 12x12 | |
| | VERT. STEEL | 6#8 | 6#8 | 6#8 | 6#7 | 6#8 | 6#9 | 6#8 | 4#7 | 6#8 | 4#8 | |
| | TIES | #3@14 | #3@12 | #3@14 | #3@12 | #3@12 | #3@12 | #3@12 | #3@12 | #3@12 | #3@12 | |
| 1ST FL. EL. 37.0 | SIZE | 14x14 | 12x18 | 14x14 | 12x18 | 12x12 | 12x16 | 12x12 | 12x16 | 12x12 | 12x12 | 12x12 MASONRY 4#5 #2@8" |
| | VERT. STEEL | 6#8 | 6#9 | 6#8 | 6#9 | 6#8 | 6#9 | 6#8 | 4#7 | 6#8 | 4#9 | |
| | TIES | #3@14 | #3@12 | #3@14 | #3@12 | | | | | | | |
| GROUND FL. EL. 33.25 | SIZE | | | | | | | | | | | |
| | VERT. STEEL | | | | | | | | | | | |
| | TIES | | | | | | | | | | | |
| BASEMENT EL. 28.33 | SIZE | | | | | | | | | | | |
| | VERT. STEEL | | | | | | | | | | | |
| | TIES | | | | | | | | | | | |
| PILE CAP TOP EL. | | F4 27.5 | F5 27.5 | EXIST. 27.5 | EXIST. 27.5 | C5 EXIST. 27.5 / C8 F4 32.33 | 32.33 | D5 EXIST. 32.33 / D8 F4 32.33 | F5 32.0 | E5 EXIST. 32.33 / E8 F4 32.33 | F5 32.33 | F1, F2 VARIES |
| DOWELS W/ACI STD. HOOK | | 6#9 ** | 6#9 ** | (4#8 EXIST) ** | (6#9 EXIST) ** | 6#8 EXIST. LAP ** / 6#9 ** | | (6#8 EXIST.) ** / 6#8 ** | 4#7 | (6#8 EXIST.) ** / 6#8 ** | 4#9 | 4#5 |

** TENSION SPLICE REQUIRED - SEE SCHEDULE THIS SHEET

## TENSION SPLICE SCHEDULE

| BAR NO. | CONTACT SPLICE LENGTH |
|---|---|
| #8 | 26" |
| #9 | 33" |

## LINTEL SCHEDULE

| TYPE | MARK | SECTION | DESCRIPTION |
|---|---|---|---|
| CMU MASONRY | L1 | | SIZE 8x16 NOMINAL CMU. REINF. 2 #4 BOTTOM. ALLOW 8" MIN. BEARING EA. SIDE OF M.O. MAX. M.O. 4'-0" |
| | L2 | | SIZE 8 x 8" NOMINAL. REINF. [illegible] ALLOW 8" MIN. BEARING EA. SIDE OF M.O. MAX. M.O. 8'-0" |
| | L3 | | SIZE 12 x 8" NOMINAL. REINF. [illegible] #5 BOTTOM. ALLOW [illegible] MIN. BEARING EA. [illegible] MAX. M.O. [illegible] |
| STEEL ANGLE | L4 | | BRICK VENEER ON CMU OR [illegible] WALL UP TO 4'-0" M.O. USE [illegible] SPANS 4'-0" TO 6'-0" [illegible] |
| | L5 | | BRICK VENEER ON CMU OR [illegible] WALL UP TO 8'-0" M.O. USE [illegible] ALLOW 4" MIN. BEARING [illegible] FOR 8" BRICK WALL USE TWO ANGLES OF THE SAME SIZE AS NOTED ABOVE |
| PRECAST CONCRETE | L6 | | PRECAST CONCRETE LINTEL. 6x6x5 [illegible] LONG POINT UP TO 6'-0" SPAN W. 4#4. SPANS 6'-0" TO 8'-0" USE 6 #5. [illegible] |

SUPERIMPOSED LOADS

## REVISIONS

| SYM | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| | | | |
| | | | |

GENERAL

1. DESIGN LIVE LOADS: ROOF = 30 PSF, FLOOR - OFFICES = 60 PSF, FILTER GALLERY = 75 PSF, PASSAGEWAYS = 100 PSF, WIND 115 MPH, SEISMIC ZONE 1.

BASED ON EXTERIOR MASONRY AND INTERIOR CONC. SHEAR WALLS FOR LATERAL SUPPORT.

FOUNDATIONS

1. ALLOWABLE SOIL BEARING PRESSURE OF 1,800 PSF.
2. BOTTOM OF ALL EXTERIOR FOOTINGS SHALL BE 2'-0" MIN. BELOW FINISHED GRADE OR 1'-0" BELOW EXIST. GRADE WHICHEVER IS LOWER.
3. PILING SHALL BE TIMBER PILE PRESSURE TREATED WITH COAL TAR CREOSOTE OR WATERBORNE PRESERVATIVE (ACA OR CCA) IN ACCORDANCE WITH AWPA BOOK OF STANDARDS (1-78 AND C-14). SEE SPECS. FOR BID LENGTH. DRIVE TEST PILES BEFORE ORDERING. BEARING CAPACITY IS 20 TONS.
4. WALLS ACTING AS RETAINING WALLS SHALL NOT BE BACKFILLED UNTIL CONCRETE HAS ATTAINED DESIGN STRENGTH.

CONCRETE

1. CONC. COMPRESSIVE STRENGTH IN 28 DAYS: PILE, FOOTINGS, SLABS ON GRADE = 3,000 PSI ALL OTHER MEMBERS 4000 PSI.
2. REINF. STEEL ASTM 615, GRADE 60, WELDED WIRE MESH ASTM A185.
3. REINF. STEEL SHALL HAVE THE FOLLOWING CLEAR CONCRETE COVER: [illegible] CAPS = 3", BEAMS, GIRDERS = 2", TANK WALLS = 2", SLABS ON GRADE = 1-1/2", SLABS = 3/4".
4. DOWELS & CONTINUOUS REINF. SHALL HAVE A MIN. LAP OF 24 BAR DIAMETERS - 12" MIN. UNLESS NOTED OTHERWISE.
5. CHAMFER ALL EXPOSED EDGES 3/4" X 45 DEGREES.
6. PROVIDE EXTRA REINF. AT OPENINGS THRU WALLS OR SLABS OF MIN. #5 DIAG. BARS.
7. CONSTRUCTION JOINTS IN FLOORS SHALL BE LOCATED NEAR THE MIDDLE OF THE SPANS OF SLABS, BEAMS OR GIRDERS UNLESS A BEAM INTERSECTS A GIRDER AT THIS POINT. PROVISIONS SHALL BE MADE FOR TRANSFER OF SHEAR & OTHER FORCES THRU THE JOINT.
8. COMPRESSION LAP SPLICE IN COLUMNS SHALL BE 24 BAR DIA. OR 12" MIN. TENSION SPLICE WHERE INDICATED ON PLANS SHALL BE AS SHOWN IN DETAIL.

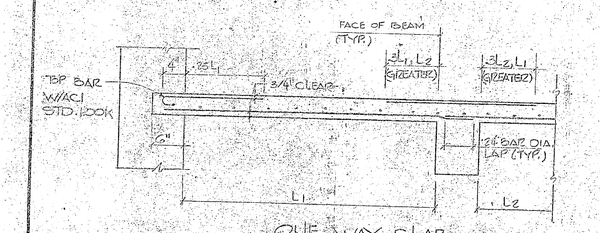
STRUCTURAL MASONRY

1. EXTERIOR CONC. MASONRY WALLS ARE CONSIDERED TO BE STRUCTURAL MASONRY.
2. COMPRESSIVE STRENGTH OF MASONRY UNITS: CLAY UNITS = 2000 PSI; CONC. UNITS GRADE N, TYPE 1.
3. ULT. COMP. STRENGTH OF MORTAR AT 28 DAYS SHALL BE 1800 PSI MIN. (TYPE M OR S).
4. TIE WYTHES W/HORIZONTAL REINF. AS SPECIFIED.
5. MAINTAIN MIN. 3/8" CLEARANCE BETWEEN PARGING ON BRICK & CONC. BLOCK WALLS.
6. MIN. BEARING FOR LINTELS 8" (CONC.), ALL LINTEL BLOCK TO BE FILLED W/3000 PSI. CONC. W/2 #5 CONT. USE 4" x 3-1/2" x 5/16" FOR STEEL LINTELS. - MIN. BEARING 4". SEE LINTEL SCHEDULE

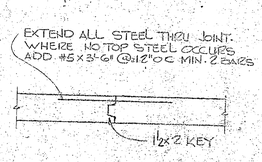
Delete Amend #1

REFERENCE DESIGN CODES

1. NAVFAC DM-2, DM-7
2. AISC
3. ACI 318-77
4. TM 5-809-3

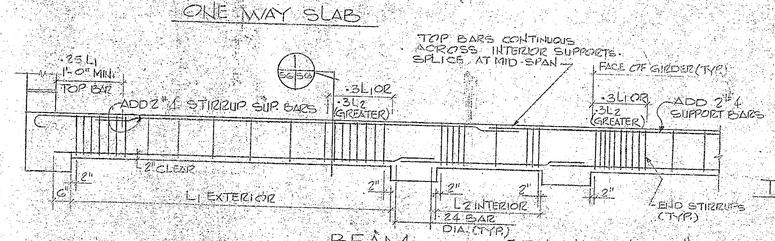



ONE WAY SLAB

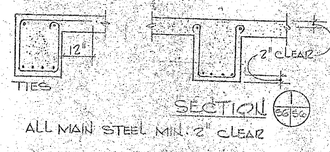



SLAB CONSTRUCTION JT.

LOCATE @ MID-SPAN UNLESS NOTED OTHERWISE



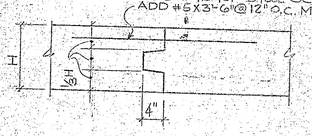

BEAM




SECTION

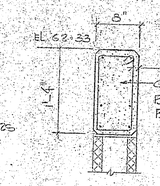
ALL MAIN STEEL MIN. 2" CLEAR

BEAMS



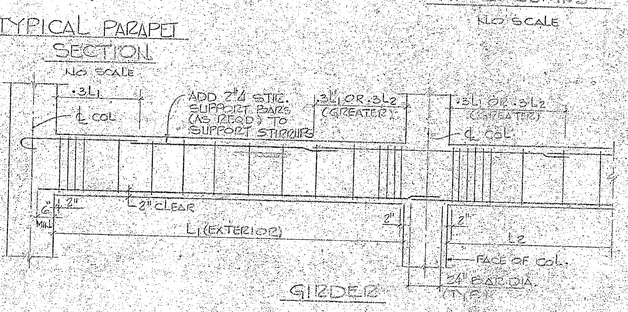

SIDE VIEW

BEAM/GIRDER CONST. JT.




TYPICAL PARAPET SECTION

NO SCALE

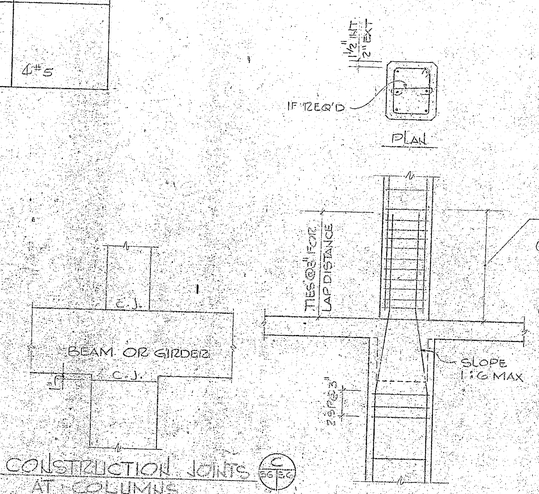



GIRDER

TYPICAL REINFORCING DETAILS (A SC/SC)

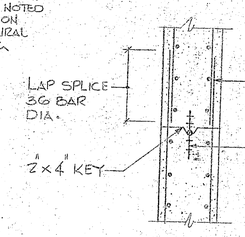
NO SCALE

NOTE: SEE HEADER, BEAM & GIRDER SCHEDULE SHT. S-1




CONSTRUCTION JOINTS AT COLUMNS (C SC/SC)

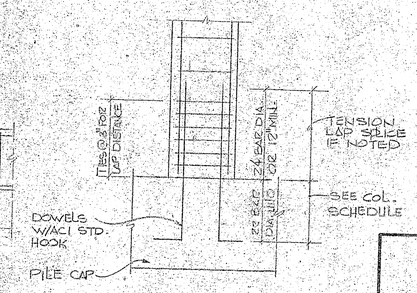
NO SCALE




ELEVATION TYPICAL WALL CONSTRUCTION JOINT (D SC/SC)

NO SCALE

U.N.O. = UNLESS NOTED OTHERWISE




SECTION

TYPICAL COL. DETAIL (B SC/SC)

NO SCALE

S-6

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA
CAMP LEJEUNE — NORTH CAROLINA

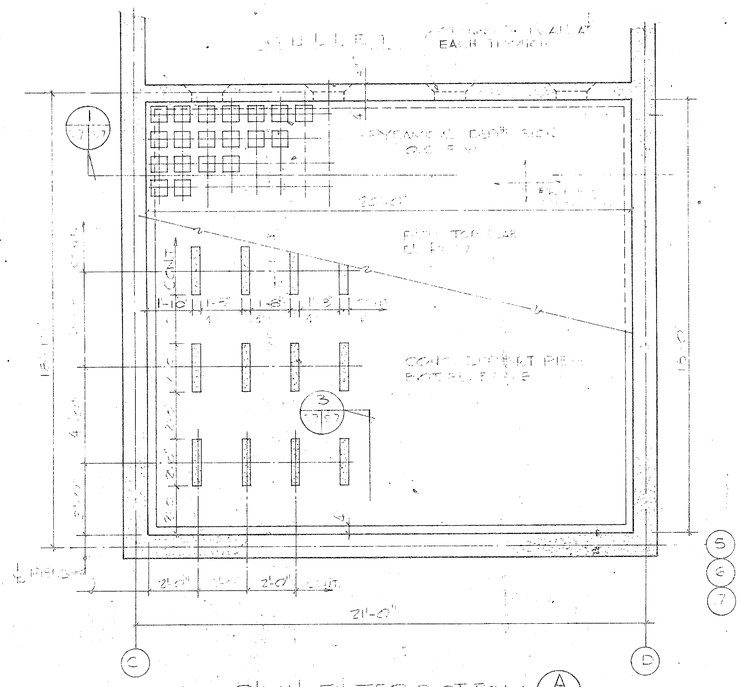
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

STRUCTURAL SCHEDULES

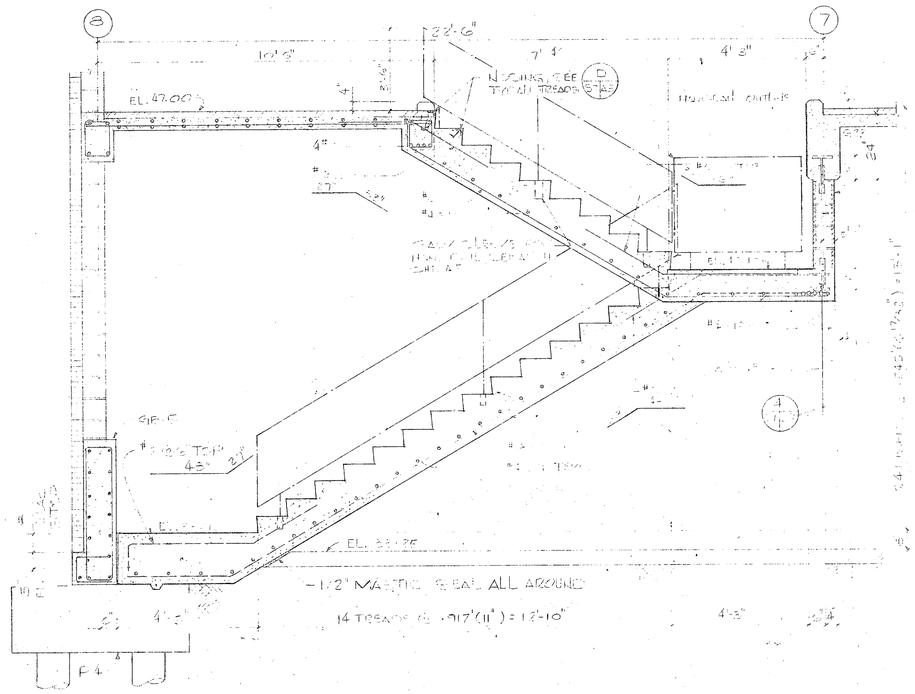
SIZE E | CODE IDENT. NO. 80091 | NAVFAC DRAWING NO. 4107555
CONSTR. CONTR. NO. N62470-81-B-1644
SCALE AS SHOWN | SPEC 05-81-1644 | SHEET 22 OF 78
EFD DWG NO.

NORTH CAROLINA PROFESSIONAL SEAL 4631 JOHN R. ARNOLD

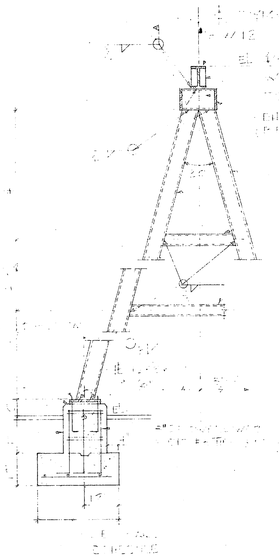
| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |



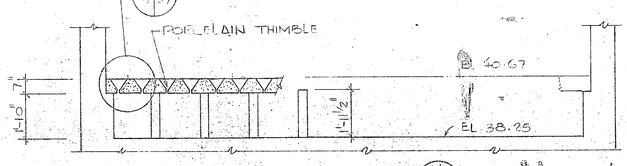

PLAN FILTER BOTTOM (A / S7|S7)
3/8" = 1'-0"



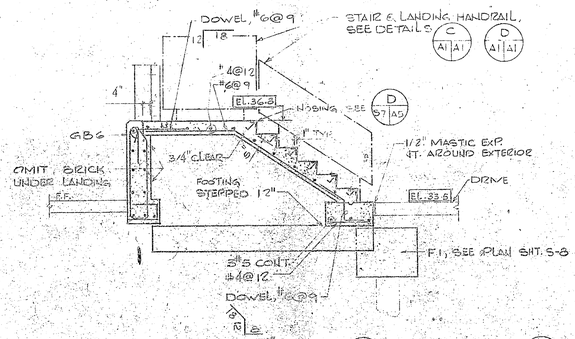

STAIR NO. 2
SECTION (4 / S3|S7)
1/2" = 1'-0"
A1, S7



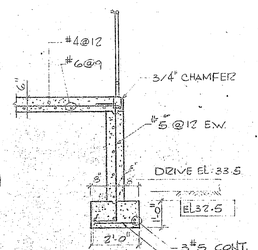
SECTION (6)



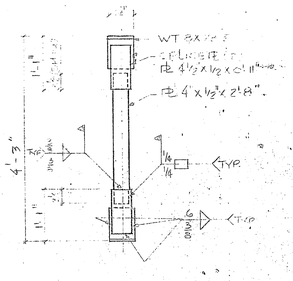

SECTION (1 / S7|S7)
3/8" = 1'-0"



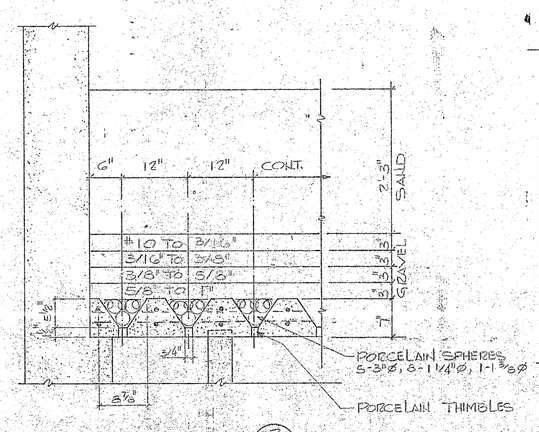

SECTION (6 / S8|S7)
3/8" = 1'-0"



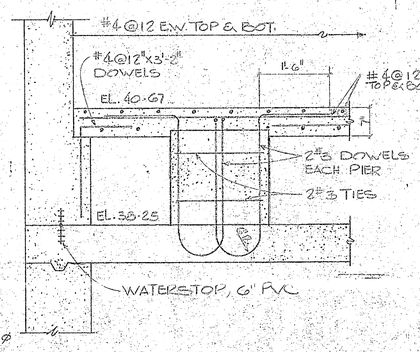

SECTION (7 / S8|S7)
3/8" = 1'-0"



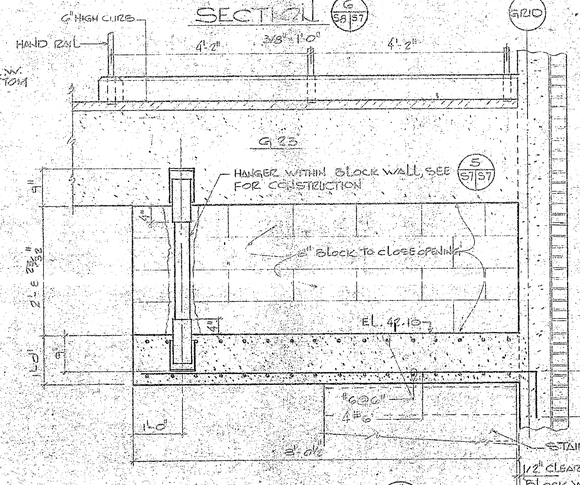

SECTION (5 / S7|S7)
3/4" = 1'-0"




SECTION (2 / S7|S7)
1" = 1'-0"

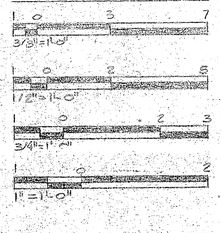



SECTION (3 / S7|S7)
3/4" = 1'-0"




SECTION (4 / S7|S7)
3/4" = 1'-0"

GRAPHIC SCALES

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HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA

CAMP LEJEUNE — NORTH CAROLINA

EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

FILTER PLAN & SECTIONS

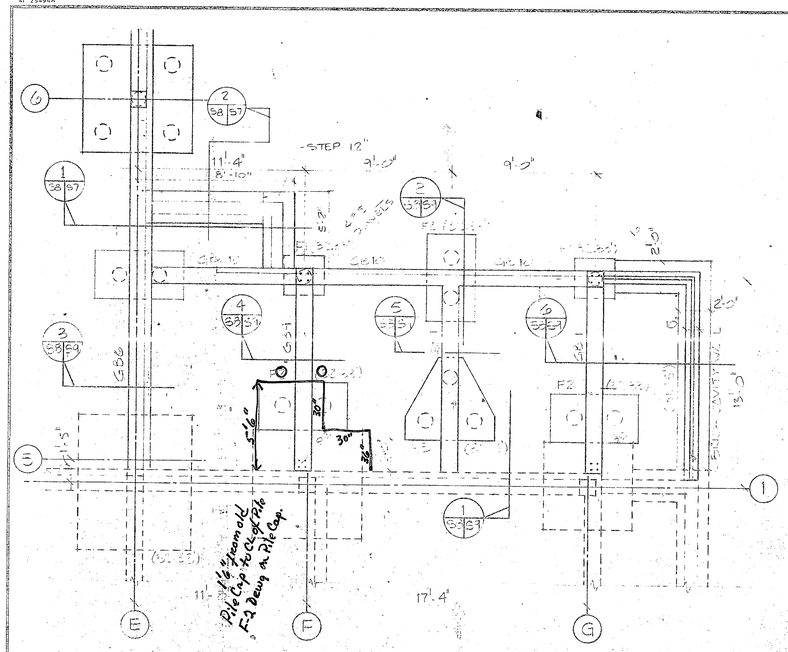
DES. JCA | DR JCA | CHK JCA
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED 7/2/84
FIRM MEMBER — PRINCIPAL
EFD FP-NVIPL — RVD
HD — DIR KTA
APPROVED — DATE
ACTIVITY - SATISFACTORY TO — DATE
APPROVED — DATE
FOR EFD FOR COMMANDER NAVFAC

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 4631 JOHN R. ANDREW

| SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO |
|---|---|---|
| F | 80091 | 4107556 |
| | | CONSTR. CONTR. NO. N62470-81-B-164 |
| SCALE AS SHOWN | SPEC. 05-81-1644 | SHEET 23 OF 74 |

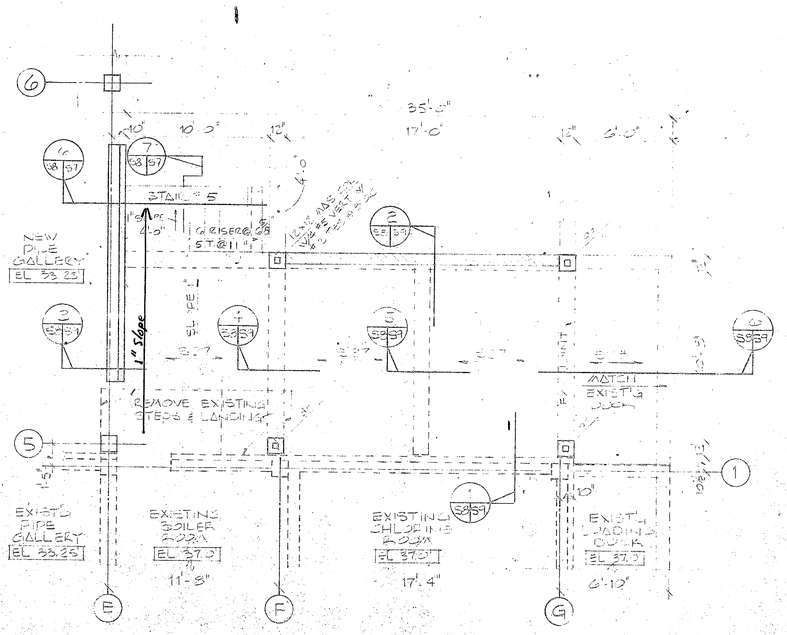
EFD DWG NO 207556

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |

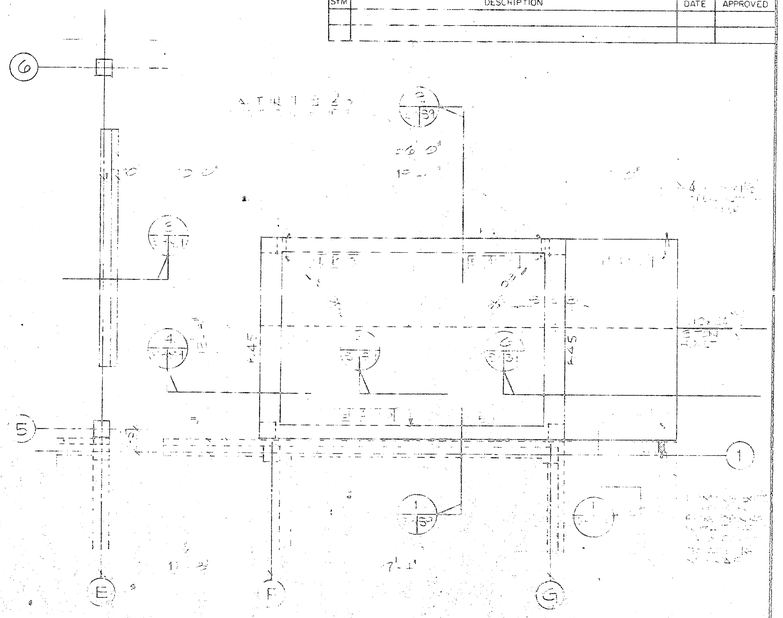



FOUNDATION PLAN
1/4" = 1'-0"

NOTES:
1. FOR TIMBER PILE SCHEDULE SEE SHT. NO. S-3.
2. FOR PILE CAP DETAIL SEE SHT. NO. S-3.
3. F-4(27.5) = PILE CAP TYPE F-4 W/ TOP EL. 27.5



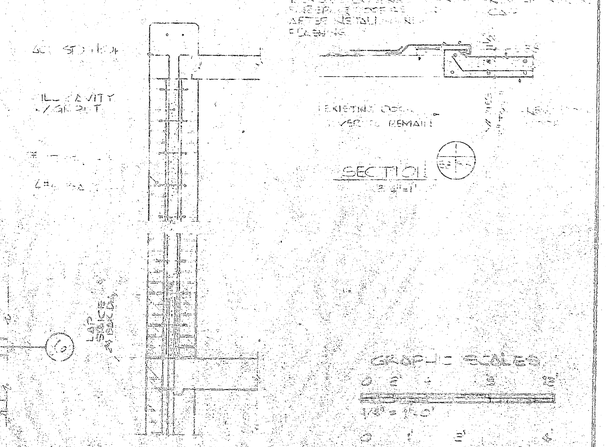

FLOOR FRAMING PLAN
1/4" = 1'-0"

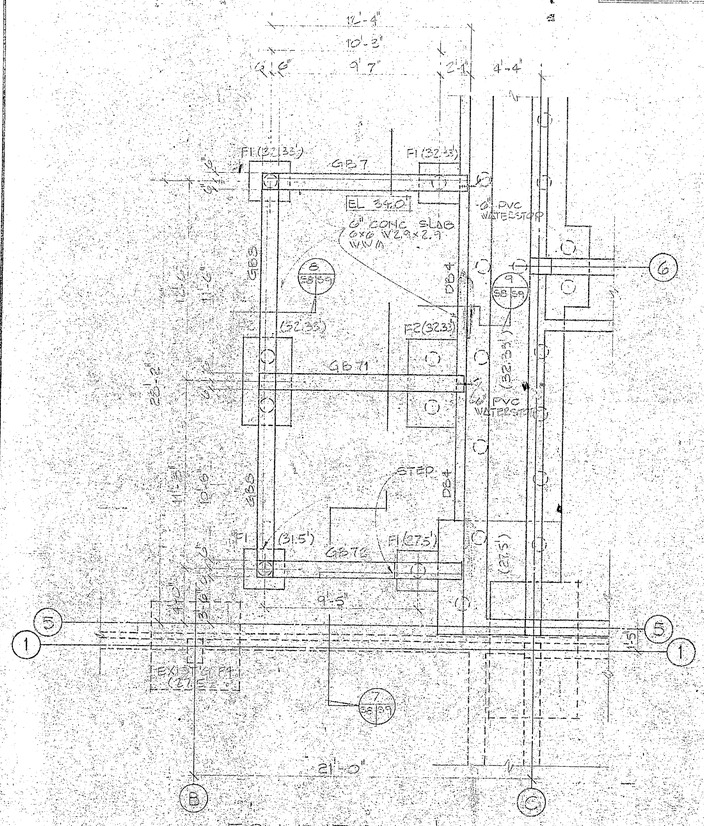


ROOF FRAMING PLAN
1/4" = 1'-0"

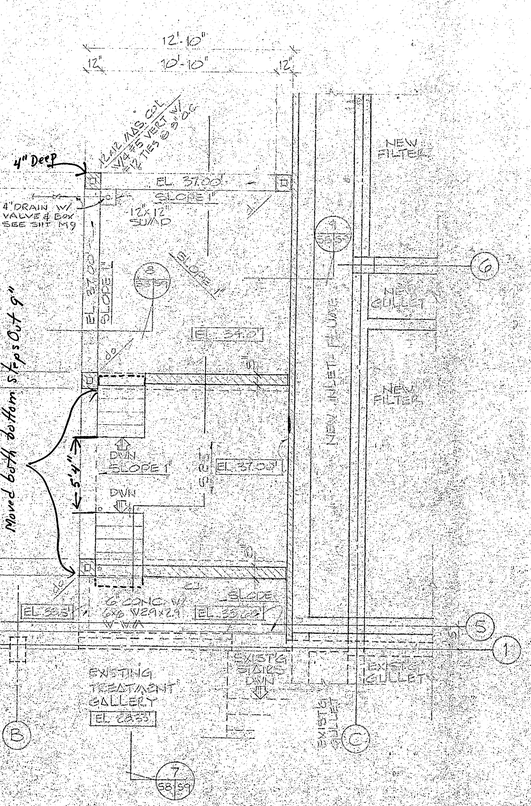
CHLORINE STORAGE

A-1

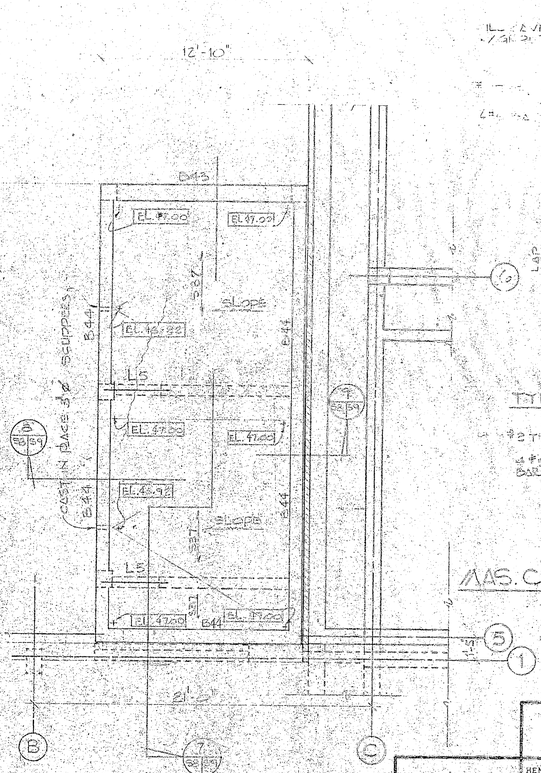



FOUNDATION PLAN
1/4" = 1'-0"




FLOOR FRAMING PLAN
1/4" = 1'-0"




ROOF FRAMING PLAN
1/4" = 1'-0"

ACID STORAGE

| | |
|---|---|
| HENRY VON OEHSEN AND ASSOCIATES CONSULTING ENGINEERS AND PLANNERS WILMINGTON, NORTH CAROLINA | DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NAVAL STATION NORFOLK, VIRGINIA |
| DES. JCA. DR. JWD CHK. JWS | CAMP LEJEUNE NORTH CAROLINA |
| PROJ. MGR. JRGH PGR. JRB | EXPANSION OF HOLCOMB BOULEVARD |
| SUBMITTED BY: DATE 7/2/84 | WATER TREATMENT PLANT |
| REPRESENTATIVE PRINCIPAL | ACID & CHLORINE STORAGE |
| EPD PROJ. LEADER LVL | |
| NAVFAC ENGR. DIR. KD | |
| APPROVED DATE 7/25/84 | SIZE E · CODE IDENT NO. 80091 · NAVFAC DRAWING NO. 4107557 |
| ACTIVITY SATISFACTORY TO | CONSTR. CONTR NO. N62470-81-B-1644 |
| DATE | SCALE AS SHOWN · SPEC. 05-81-1644 · SHEET 24 OF 74 |
| FOR EPD FILE NAVFAC | EPD DWG NO. 207557 |

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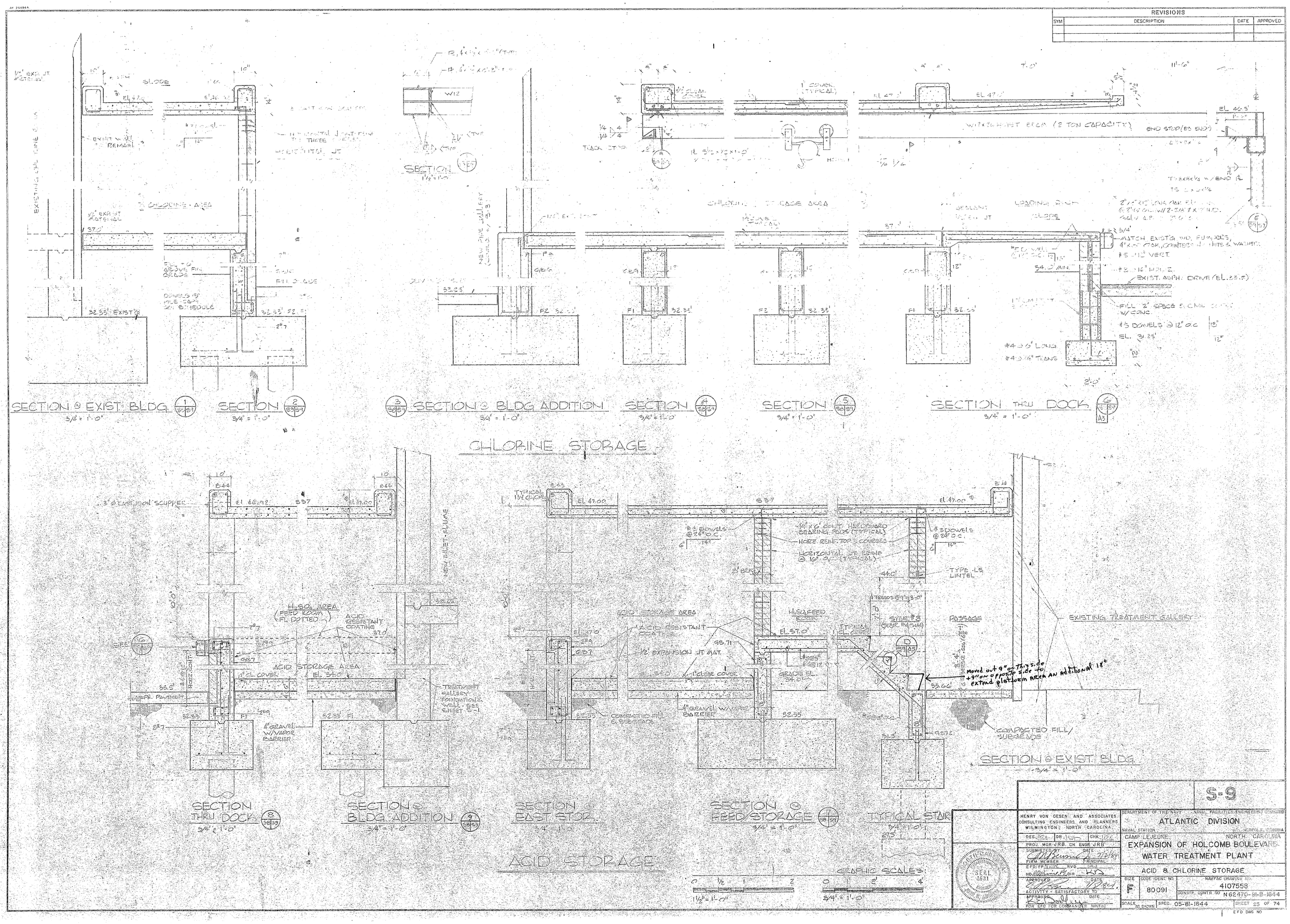
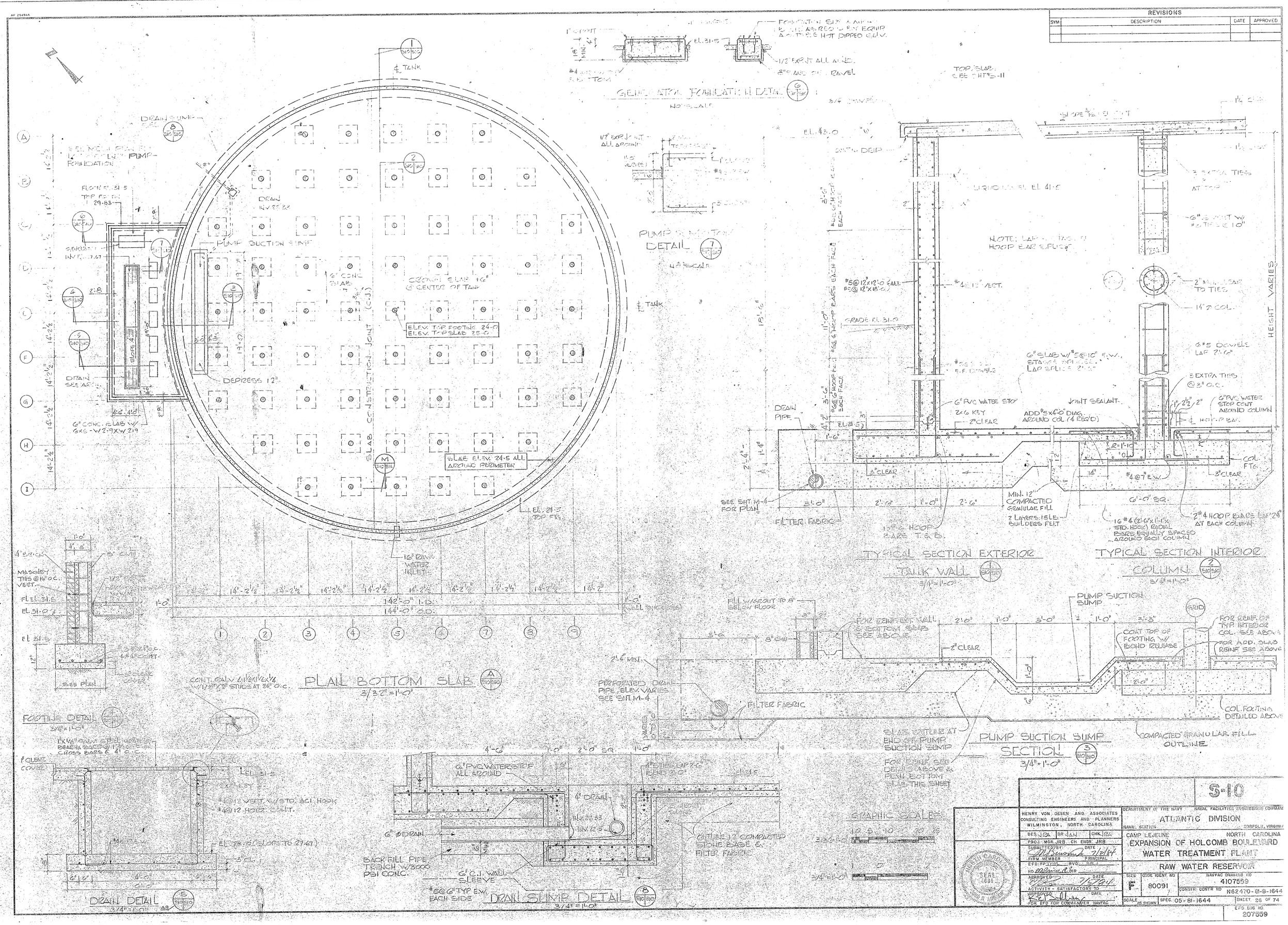
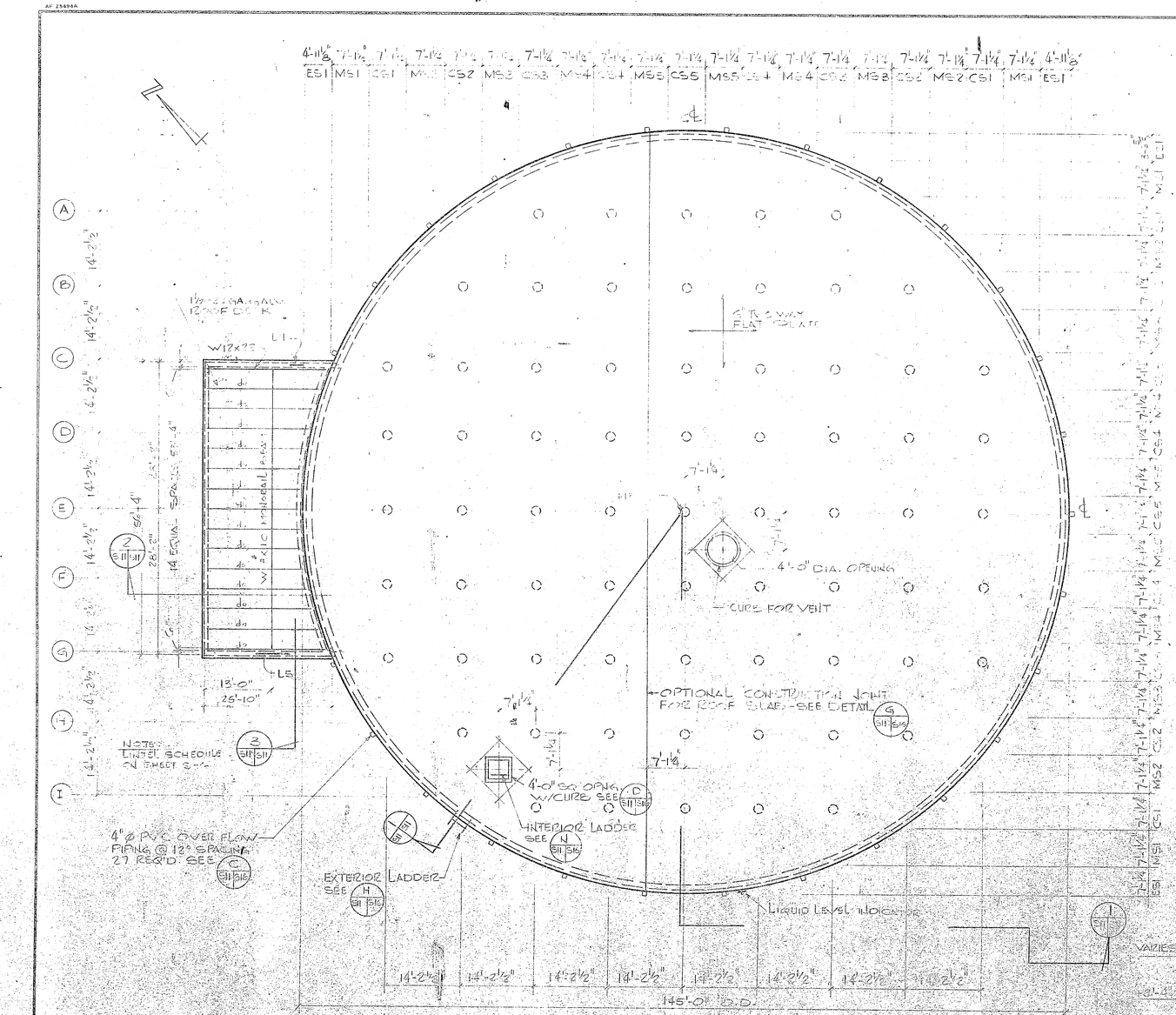
| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |



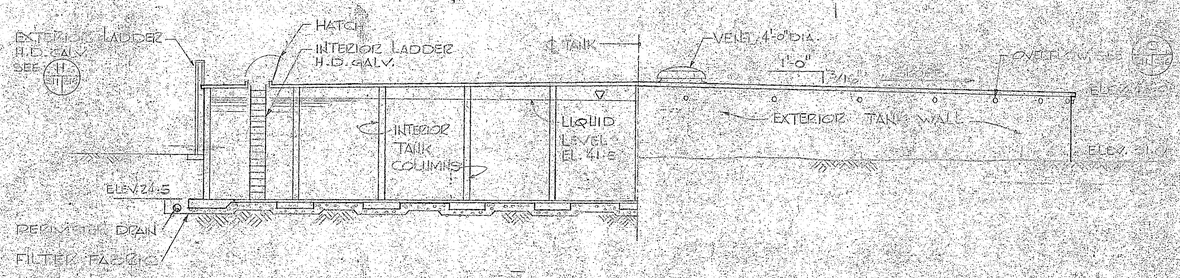
| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |



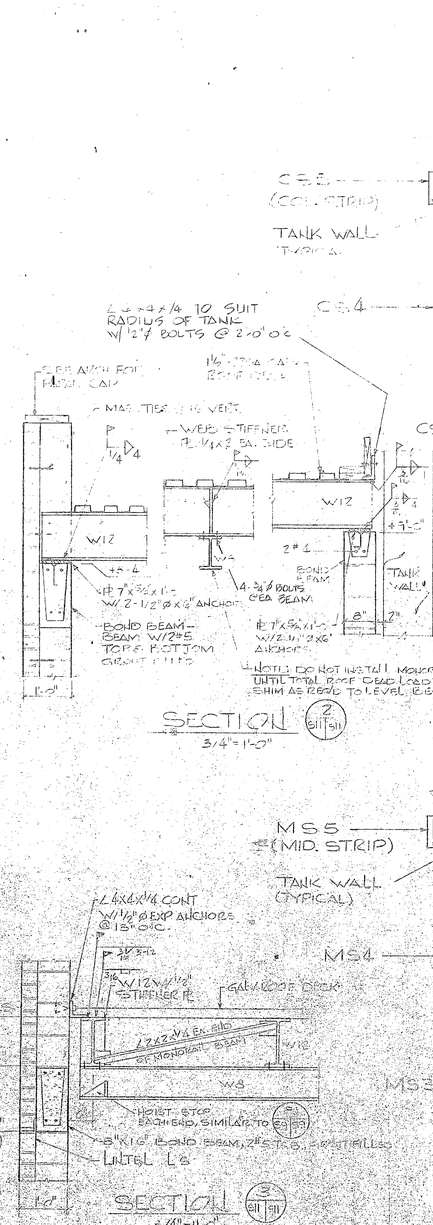
| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |




PLAN TOP SLAB (A) 3/32"=1'-0"

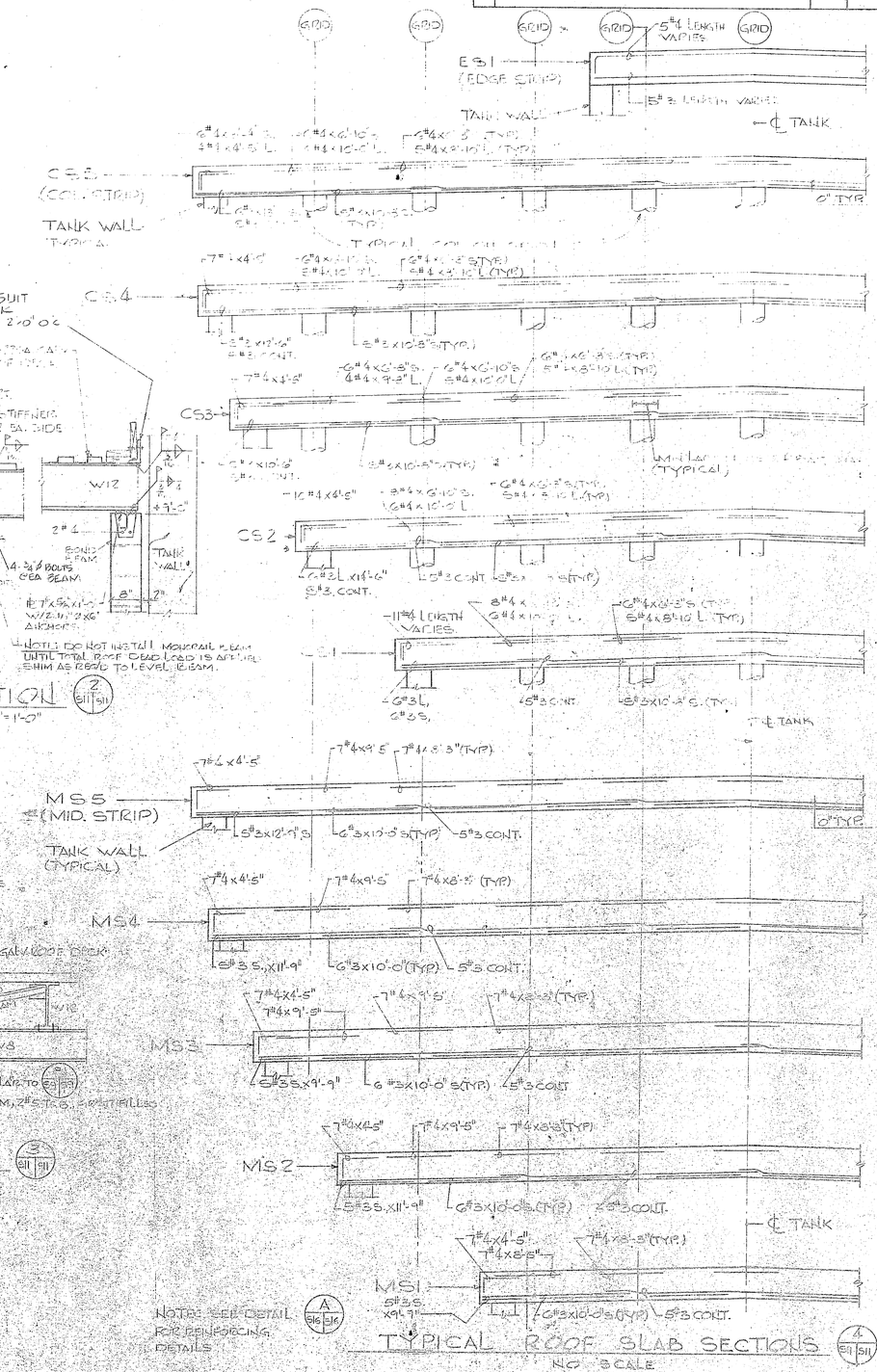



PARTIAL SECTION & ELEVATION (1) 3/32"=1'-0"




SECTION (2) 3/4"=1'-0"

SECTION (3) 3/4"=1'-0"




TYPICAL ROOF SLAB SECTIONS (4) NO SCALE

GRAPHIC SCALES
3/4"=1'-0" 0 1 2
3/32"=1'-0" 0 2.5 10 20

S-11

HENRY VON OESEN, AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION — ATLANTIC DIVISION — NORFOLK, VIRGINIA

CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD
WATER TREATMENT PLANT

RAW WATER RESERVOIR

DES. DEC. DR. JAN. CHK. JRB
PROJ. MGR. JRB CH. ENGR. JRB
SUBMITTED BY — DATE
EFD-FP DIV. — RVD
FIRM MEMBER — PRINCIPAL
HD — DIR. RP
APPROVED — DATE
ACTIVITY - SATISFACTORY TO — DATE
APPROVED — DATE
FOR EFD FOR COMMANDER NAVFAC

SIZE F | CODE IDENT. NO. 80091 | NAVFAC DRAWING NO. 4107560
CONTR. CONTR. NO. N62470-81-B-1644
SCALE AS SHOWN | SPEC. 05-81-1644 | SHEET 27 OF 74
EFD DWG NO.

AF 2509KA

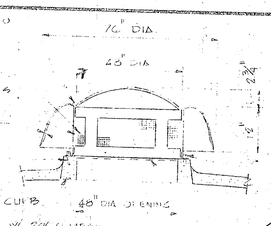
RIMS LAMINATED TO HEAD CONTINUOUS

20/20 MESH FIBER GLASS SCREEN

6 SCREEN OPENINGS 7", 14"

1/4" THICKNESS TYP

1/4" ANCHOR CBLT IN CURB

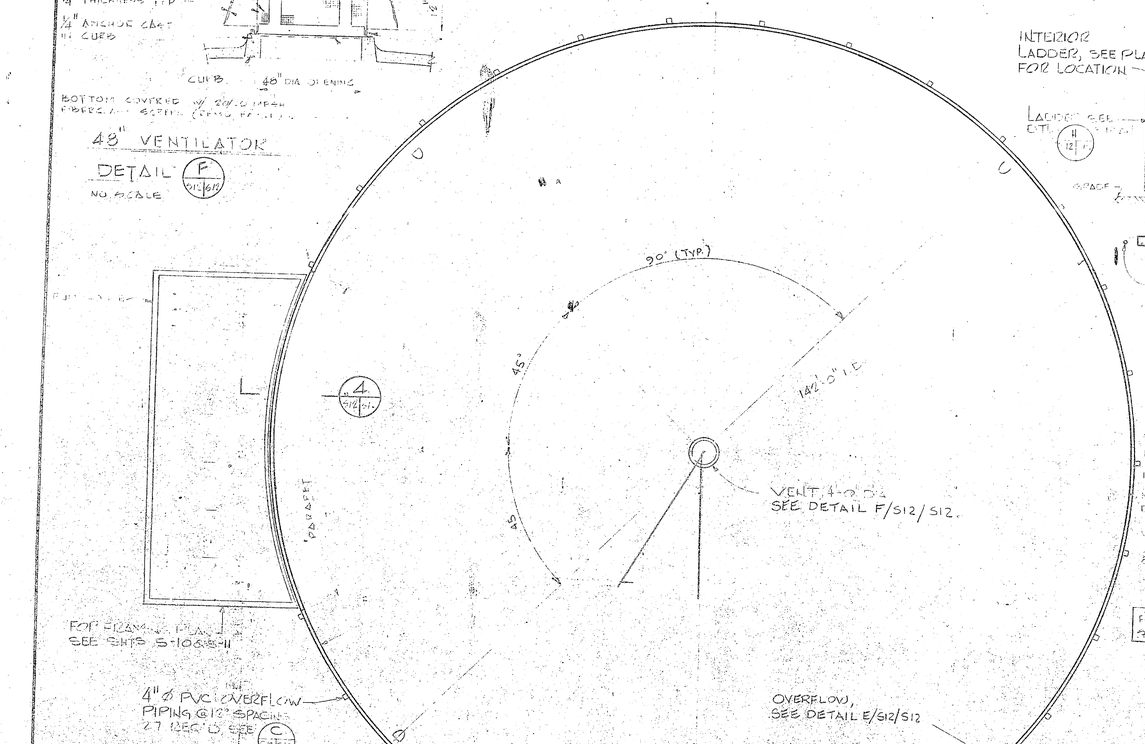



BOTTOM COVERED W/ 20/20 MESH FIBERGLASS SCREEN (SEMI-PERMANENT)

48" VENTILATOR DETAIL F/S12/S16

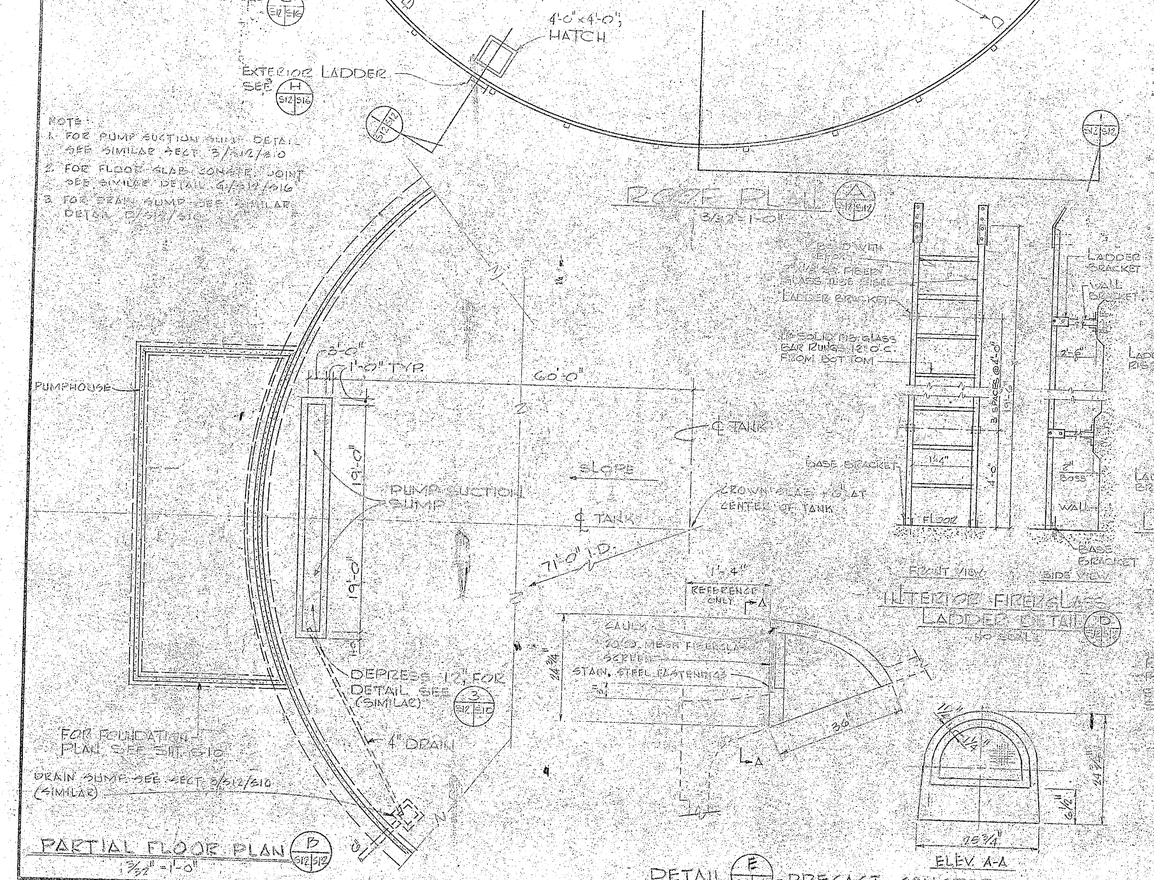
NO SCALE

1/4" x 1" SS MACHINE BOLT W/WASHER SPACED @ 60° (6 REQ'D)

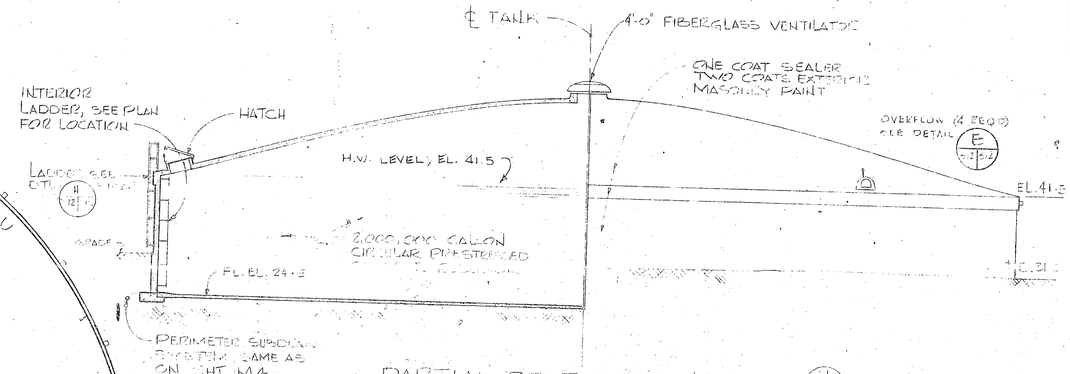



NOTE:
1. FOR PUMP SUCTION SUMP DETAIL SEE SIMILAR SECT. 3/S12/S10
2. FOR FLOOR SLAB CONTROL JOINT SEE SIMILAR DETAIL G/S12/S16
3. FOR DRAIN SUMP SEE SIMILAR DETAIL D/S12/S10

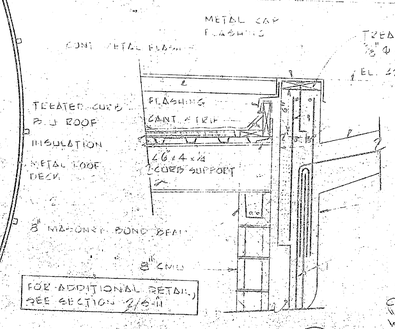
ROOF PLAN 3/32" = 1'-0" A/S12/S16



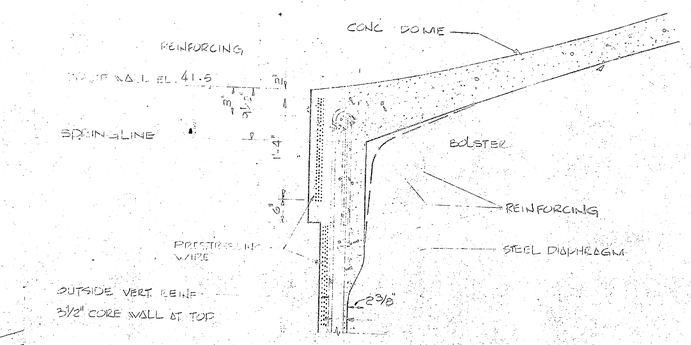

PARTIAL FLOOR PLAN 3/32" = 1'-0" B/S12/S16



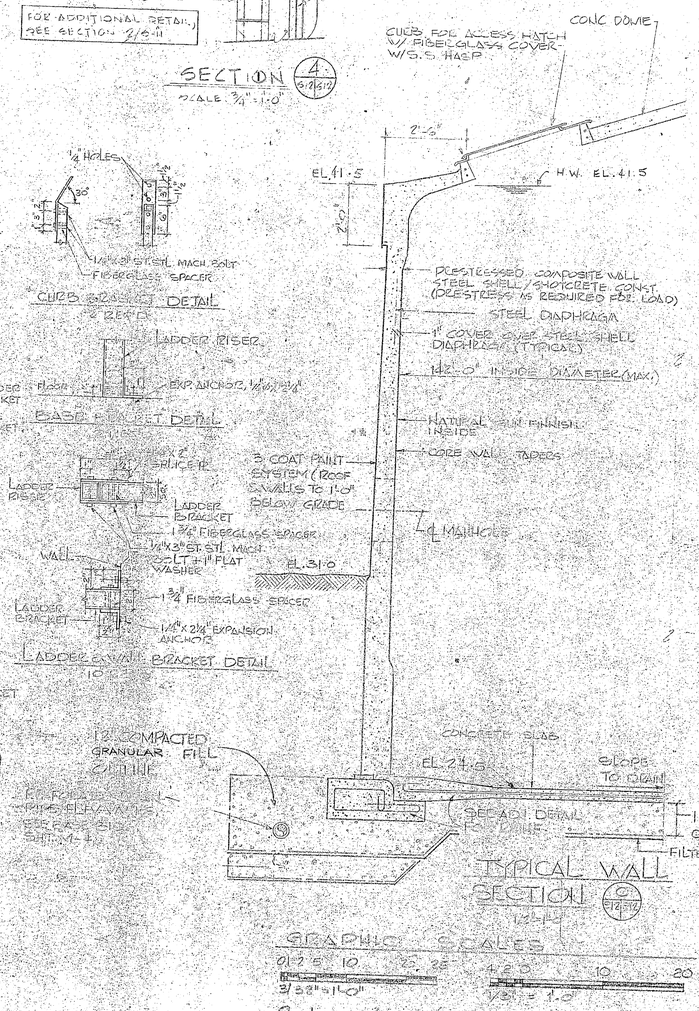

PARTIAL SECTION & ELEVATION 3/32" = 1'-0" 1/S12/S16



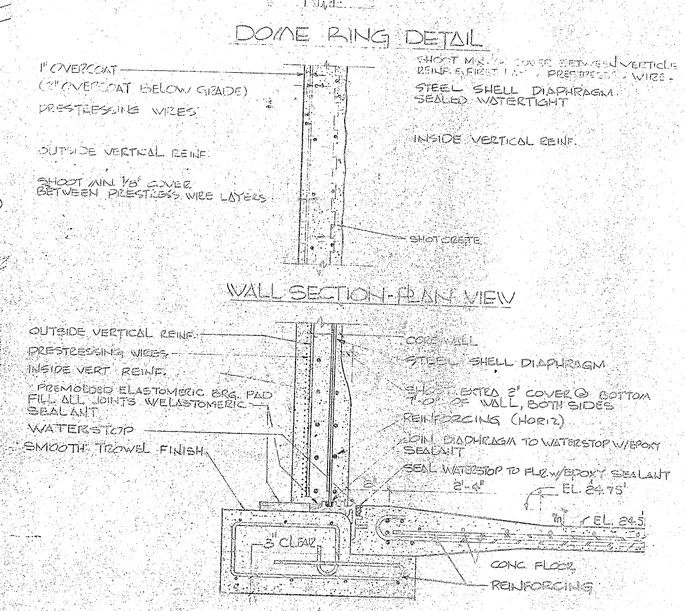

SECTION 4/S12/S16 SCALE: 3/4" = 1'-0"




DOME RING DETAIL




TYPICAL WALL SECTION C/S12/S16




WALL SECTION-PLAN VIEW

FLOOR-WALL DET.

TYPICAL WALL DETAILS 3/S12/S16 SCALE: 1" = 1'-0"

NOTE: PROVIDE 2" CLEAR COVER ON ALL SLAB REINF.




PARTIAL FLOOR PLAN 3/32" = 1'-0" B/S12/S16







DETAIL E/S12/S16 - PRECAST CONCRETE OVERFLOW (4 REQ'D. MIN.) NO SCALE




GRAPHIC SCALES

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1/2 | 5 | 10 | 15 | 20 | 1 | 2 | 5 | 10 | 15 | 20 |
| 3/32" = 1'-0" | | | | | | 1/8" = 1'-0" | | | | | |
| 0 | 1 | 2 | 4 | | | 0 | 1 | 2 | 3 | | |
| 1/2" = 1'-0" | | | | | | 1/4" = 1'-0" | | | | | |

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |

NOTE:
1. DESIGN AND FOUNDATION INFORMATION ON THIS DRAWING IS FOR ILLUSTRATION PURPOSES ONLY AND SUBJECT TO MODIFICATIONS CONTINGENT ON TANK USED.
2. CONTRACTOR TO SUBMIT DESIGN CALCULATIONS SEALED BY A REGISTERED ENGINEER AND SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION.
3. TANK WALL AND DOME SHALL BE DESIGNED TO SUPPORT A LIVE LOAD OF 40 PSF, 2 PLUS DEAD LOAD.
4. DESIGN FOR HYDROSTATIC PRESSURE OF FOUNDATION SHALL BE DESIGNED FOR HYDROSTATIC PRESSURE OF 1' ABOVE DOME FAILS.
5. BASED ON FACTORY STRENGTH OF 4,000 PSI AT 28 DAYS.
6. DO NOT BEGIN FINAL PIPING CONNECTIONS UNTIL RESERVOIR IS FILLED COMPLETELY FOR A MINIMUM PERIOD OF 24 HOURS.

S-12

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VIRGINIA

CAMP LEJEUNE — NORTH CAROLINA

EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

RAW WATER RESERVOIR-ALTERNATE

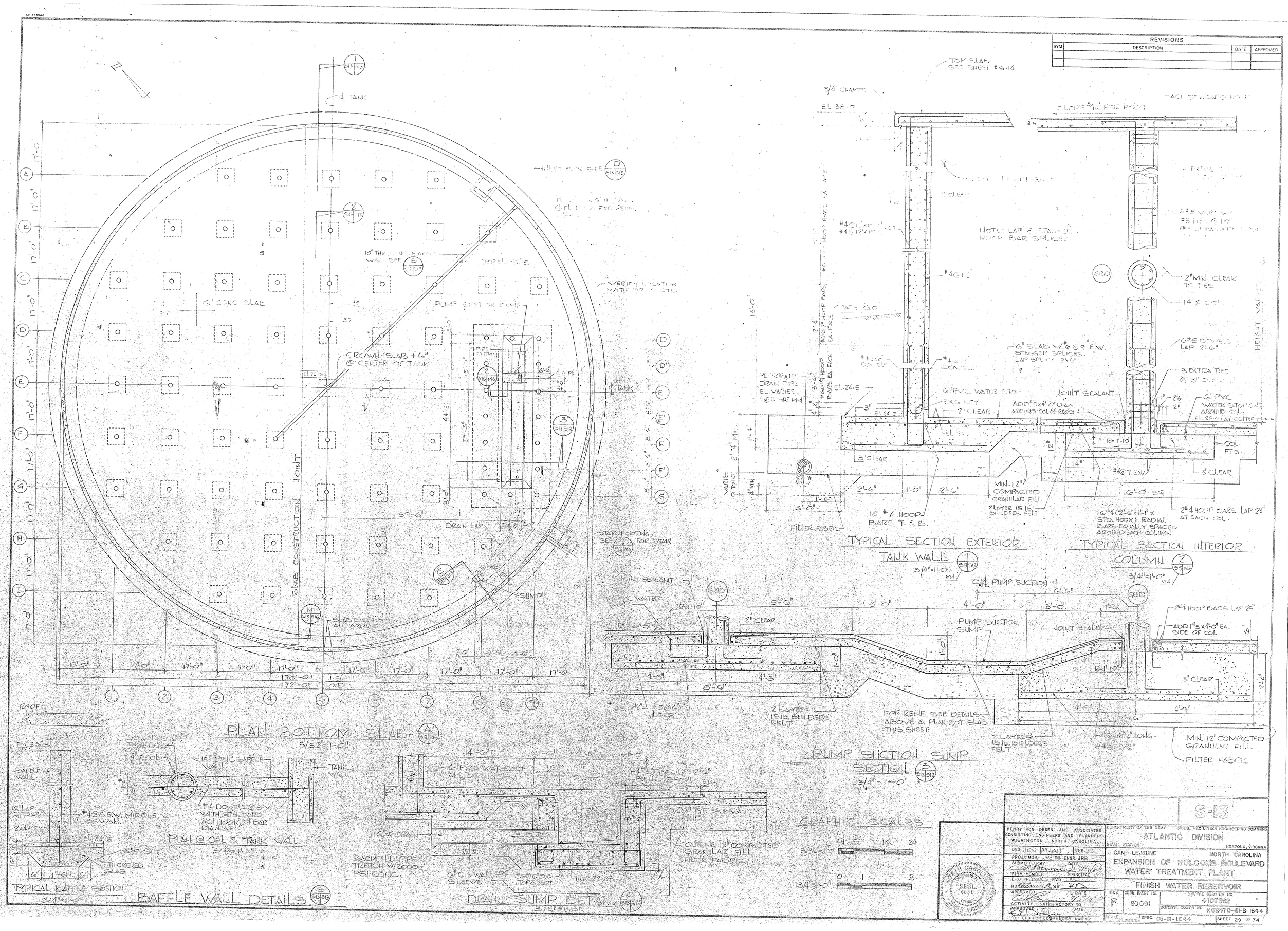
DES. JCA DR. VBJ CHK. JCA
PROJ. MGR. JRB CH. ENGR. JRB
SUBMITTED BY: DATE: 7/1/84
FIRM MEMBER PRINCIPAL
EFD: FP/LW RVD
HD DIR KD
APPROVED DATE
ACTIVITY - SATISFACTORY TO
APPROVED DATE
FOR EFD FOR COMMANDER NAVFAC

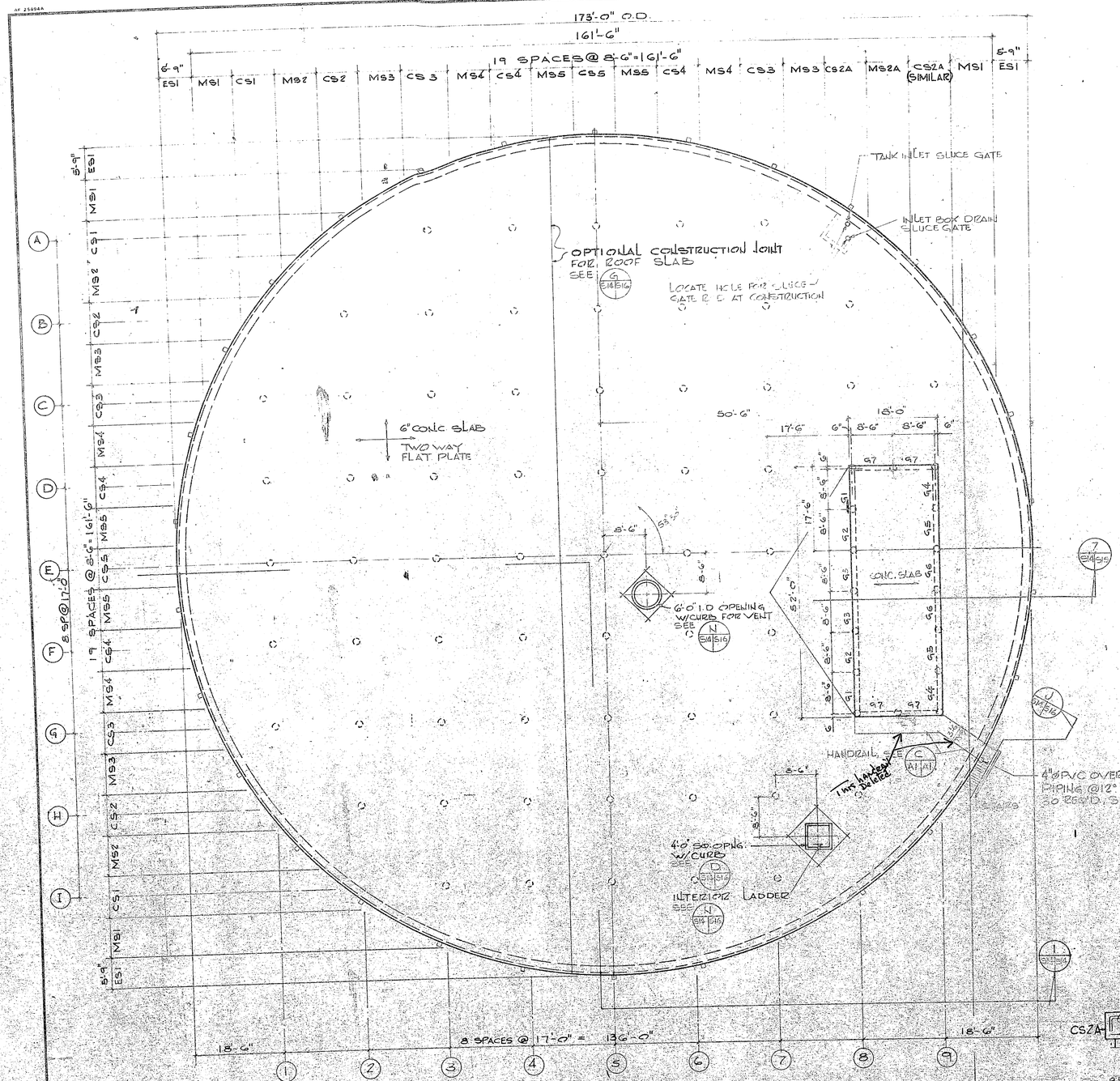
SIZE F | CODE IDENT. NO. 80091 | NAVFAC DRAWING NO. 4107561
CONTR. CONT. NO. N62470-81-B-1644
SCALE AS SHOWN | SPEC. 05-81-1644 | SHEET 28 OF 74
EFD DWG NO. 207561

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 4331 JOHN R. ANDREW

AF 25494A

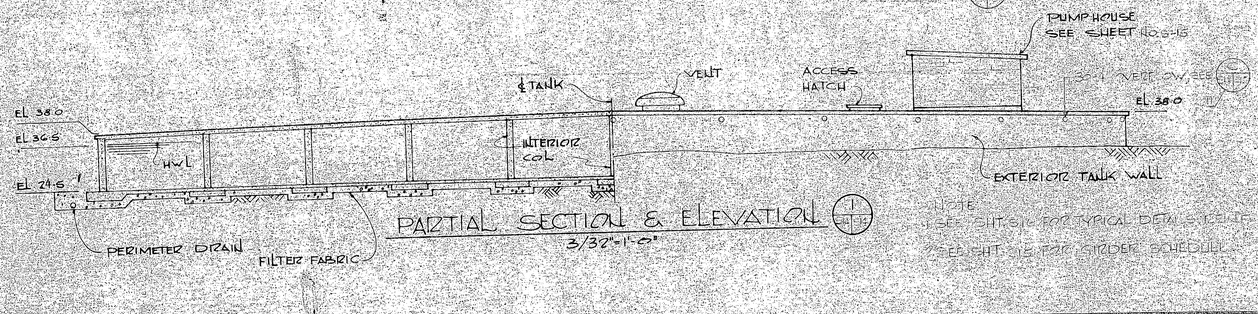
| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |






PLAN TOP SLAB

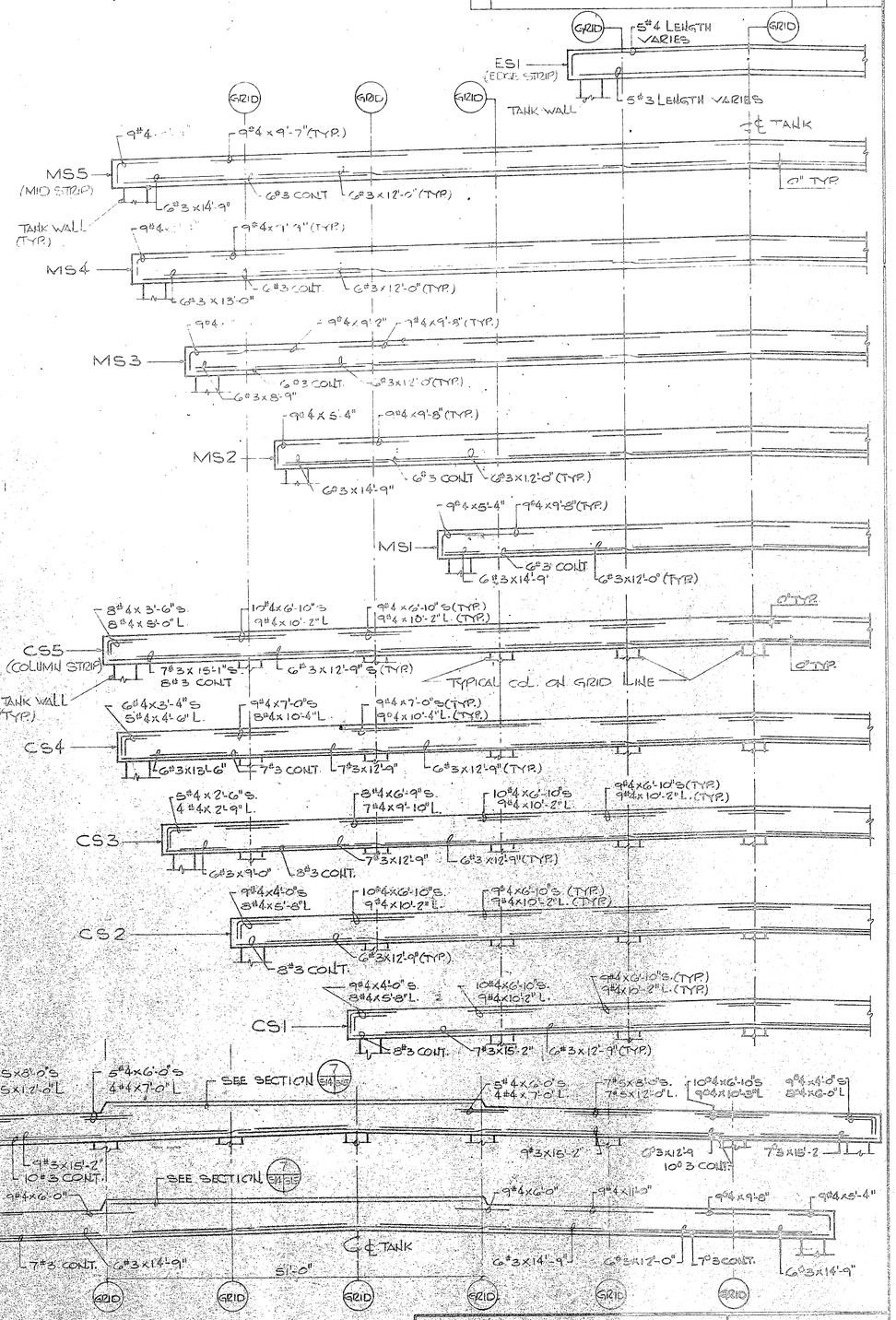
3/32" = 1'-0"




PARTIAL SECTION & ELEVATION

3/32" = 1'-0"

NOTE
1. SEE SHT. S-16 FOR TYPICAL DETAILS & CONN. DETAILS
2. SEE SHT. S-15 FOR GIRDER SCHEDULE




TYPICAL ROOF SLAB SECTIONS

1/4" SCALE

GRAPHIC SCALE

3/32" = 1'-0"

0 2.5 10 20

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |

S-14

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

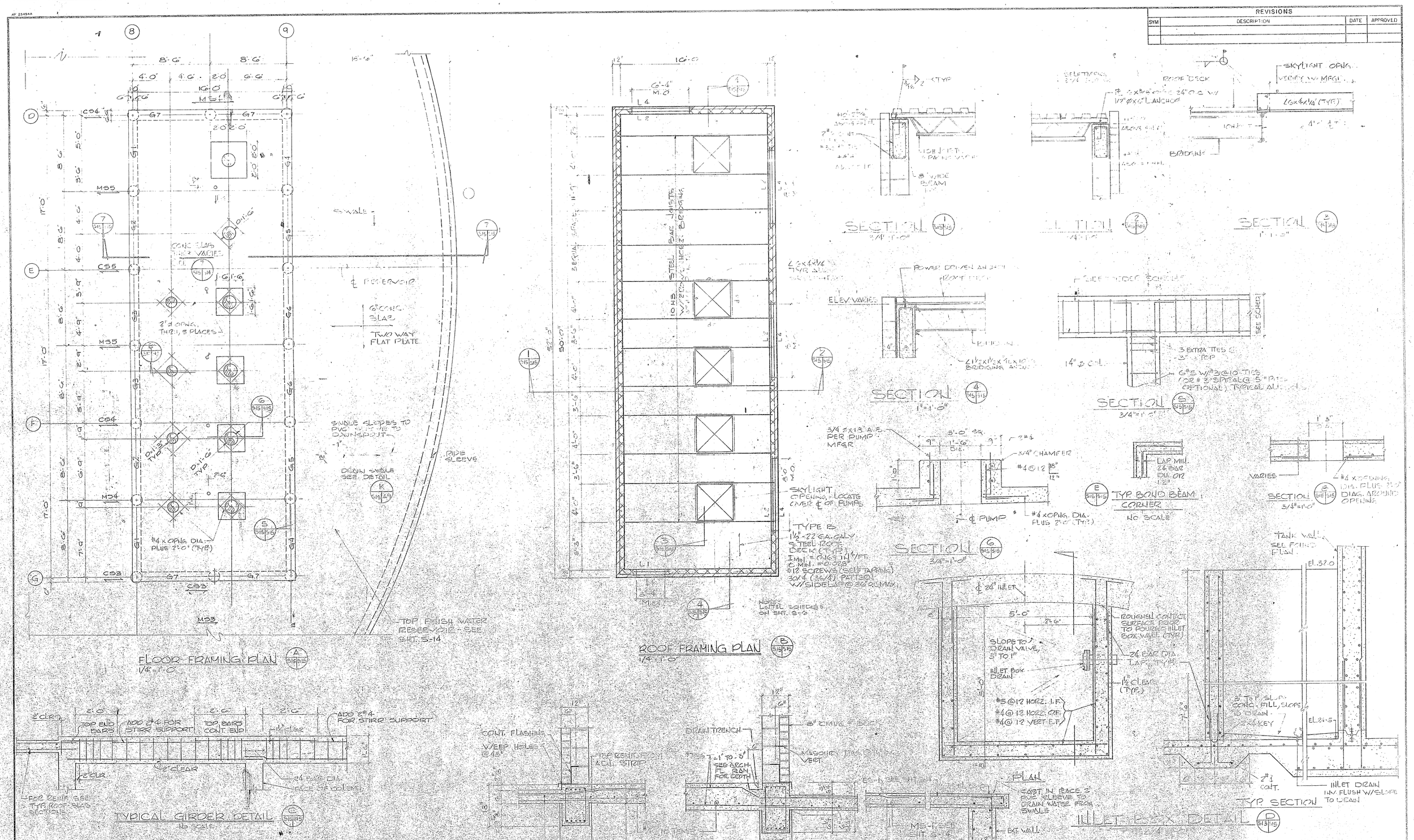
DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA

EXPANSION OF MCLOONS BOULEVARD
WATER TREATMENT PLANT

FINISH WATER RESERVOIR

F — CODE IDENT NO. 80091 — NAVFAC DRAWING NO. 4104635
CONTR. CONTR NO. N62470-81-B-1644
SCALE — SHEET 30 OF 74
EFD DWG NO. 207...

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |




## GIRDER SCHEDULE

| MARK | SIZE | BOT. BARS CONT. | TOP BARS NON CONT. END | TOP BARS CONT. END | STIRRUPS SIZE | STIRRUPS TYPE | STIRRUPS SPACING EA. END | REMARKS |
|---|---|---|---|---|---|---|---|---|
| G1 | 12x18 | 5#4 | 2#4 | 5#5 | #3 | □ | 7@8" (2EM@9") | |
| G2 | 12x18 | 4#4 | — | 5#5 | #3 | do | 5@8" (2EM@9") | |
| G3 | 12x18 | 5#4 | | 5#5 | #3 | do | 5@8" (2EM@9") | |
| G4 | 12x18 | 2#5 2#6 | 2#4 | 5#6 | #3 | do | 7@8" (2EM@9") | |
| G5 | 12x18 | 5#4 | | 2#5 2#7 | #3 | do | 7@8" (2EM@9") | |
| G6 | 12x18 | 5#4 | | 2#5 2#7 | #3 | do | 7@8" (2EM@9") | |
| G7 | 12x18 | 2#4 | 2#4 | 5#4 | #3 | do | 9" FULL LENGTH | |

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 10123 ROBERT W. O'BRIANT

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA

CAMP LEJEUNE — NORTH CAROLINA

# EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

## FINISH WATER RESERVOIR

| SIZE | CODE IDENT. NO | NAVFAC DRAWING NO |
|---|---|---|
| F | 80091 | 4107564 |

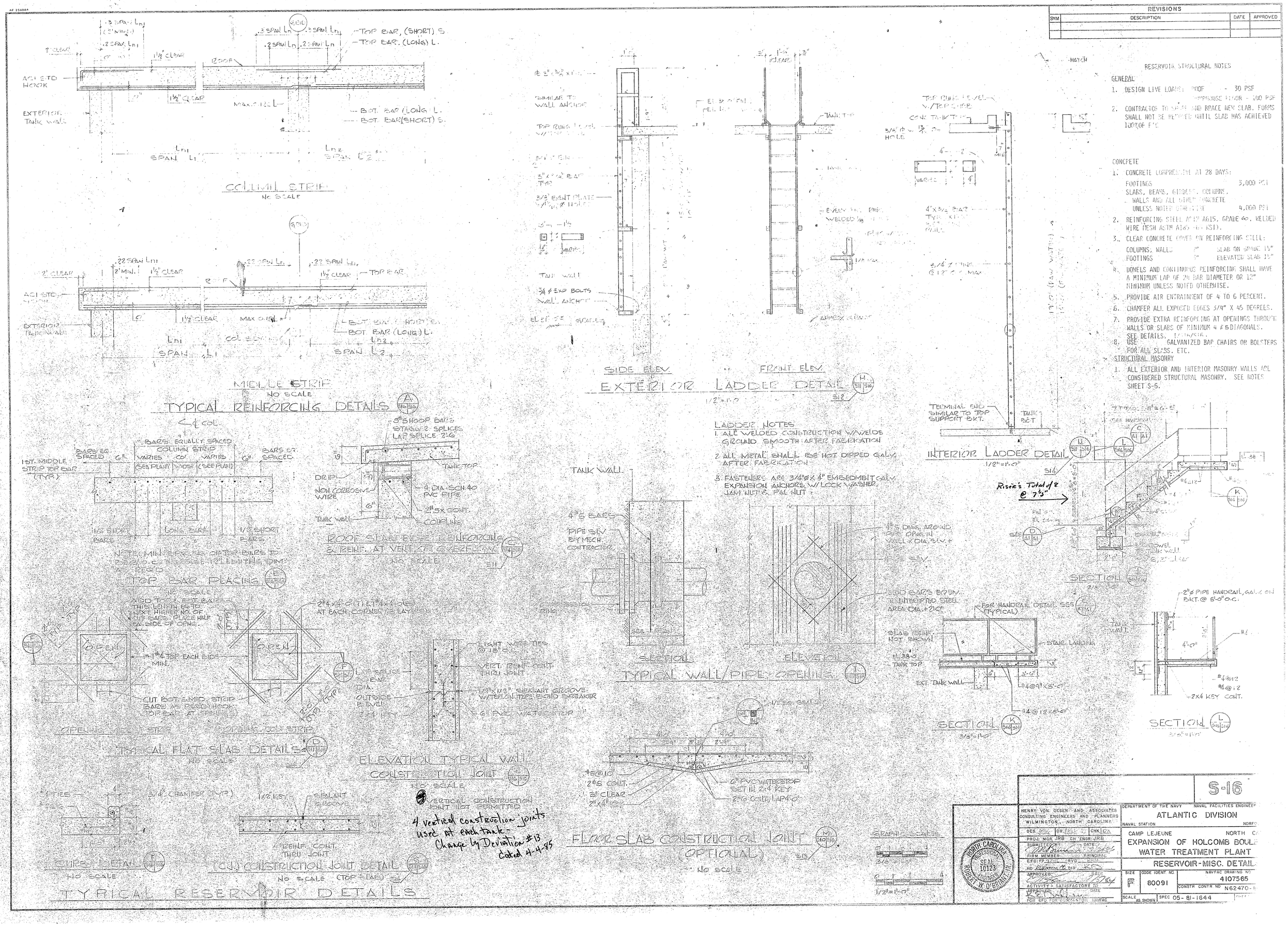
CONSTR. CONTR. NO N62470-81-B-1644

SCALE AS SHOWN — SPEC 05-81-1644 — SHEET 31 OF 74

EFD DWG NO. 207584

S-15

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |




RESERVOIR STRUCTURAL NOTES

GENERAL

1. DESIGN LIVE LOADS: ROOF - 30 PSF
   WAREHOUSE FLOOR - 100 PSF
2. CONTRACTOR TO SHORE AND BRACE NEW SLAB. FORMS SHALL NOT BE REMOVED UNTIL SLAB HAS ACHIEVED 100% OF F'C

CONCRETE

1. CONCRETE COMPRESSIVE AT 28 DAYS:
   FOOTINGS 3,000 PSI
   SLABS, BEAMS, GIRDERS, COLUMNS, WALLS AND ALL OTHER CONCRETE UNLESS NOTED OTHERWISE 4,000 PSI
2. REINFORCING STEEL ASTM A615, GRADE 60. WELDED WIRE MESH ASTM A185 (60 KSI).
3. CLEAR CONCRETE COVER ON REINFORCING STEEL:
   COLUMNS, WALLS 2" SLAB ON GRADE 1½"
   FOOTINGS 3" ELEVATED SLAB 1½"
4. DOWELS AND CONTINUOUS REINFORCING SHALL HAVE A MINIMUM LAP OF 24 BAR DIAMETER OR 12" MINIMUM UNLESS NOTED OTHERWISE.
5. PROVIDE AIR ENTRAINMENT OF 4 TO 6 PERCENT.
6. CHAMFER ALL EXPOSED EDGES 3/4" X 45 DEGREES.
7. PROVIDE EXTRA REINFORCING AT OPENINGS THROUGH WALLS OR SLABS OF MINIMUM 4 #5 DIAGONALS. SEE DETAILS.
8. USE GALVANIZED BAR CHAIRS OR BOLSTERS FOR ALL SLABS, ETC.

STRUCTURAL MASONRY

1. ALL EXTERIOR AND INTERIOR MASONRY WALLS ARE CONSIDERED STRUCTURAL MASONRY. SEE NOTES SHEET S-6.

S-16

HENRY VON DESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DES. ... DR. ... CHK. ...
PROJ. MGR. JRB CH. ENGR. JRB
SUBMITTED BY: ... DATE
FIRM MEMBER: ... PRINCIPAL
ERD/RP ... BVD ...
HD ... DIR ...
APPROVED: ... DATE
ACTIVITY - SATISFACTORY TO:
APPROVED: ... DATE
FOR EFD FOR DISTRICT ... NAVFAC

NORTH CAROLINA PROFESSIONAL SEAL 10123 ENGINEER ROBERT W. O'BRIANT, JR.

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEER
ATLANTIC DIVISION
NAVAL STATION NORFOLK
CAMP LEJEUNE NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
RESERVOIR-MISC. DETAIL

| SIZE | CODE IDENT NO | NAVFAC DRAWING NO |
|---|---|---|
| E | 80091 | 4107565 |
| | | CONSTR CONTR NO N62470-1 |
| SCALE AS SHOWN | SPEC 05-81-1644 | |

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |

NEW FILTER BOTTOM & SUPPORT PIERS SEE DETAIL 2 S7/S7

FILTER #1

20'-0" x 20'-0" TYP. TYPE

MANHOLE

12" x 18" INLET SLUICE GATE. 12" x 18" FLANGED WALL THIMBLE

FILTER INLET FLUME

NEW FILTER #4

3" GATE VALVE TYP.

FILTER BOTTOM AS SHOWN IN FILTER #5 REQ'D. IN 4 & 3

MANHOLE STEPS

GULLET

NEW FILTER #3

1" AIR & 1" CONTROL WATER

BACKWASH RATE OF FLOW CONTROLLER

1" AIR VENT

RATE CONTROLLER

EFFLUENT VALVE

24" WASTE

18" EFFLUENT

18" BACKWASH

Un-flange

CONNECT TO EXIST. WASTE

CONNECT TO EXIST. AIR AND CONTROL WATER

EXISTING FILTER #2

CONNECT TO EXIST. SURFACE WASH

Un-flange CONNECT TO EXIST. BACKWASH

REMOVE EXIST. BLIND FLANGE

Un-flange

CONNECT TO EXIST. EFFLUENT

PIPE GALLERY
1/4" = 1'-0"

INFLUENT INDICATOR

WASH TROUGHS 1'-4" WIDE x 1'-7" DEEP

FILTER OPERATING TABLE

FILTER BED AGITATOR

GULLET ACCESS OPENING W/GRATING

WASH RATE DIAL

NEW FILTER #4

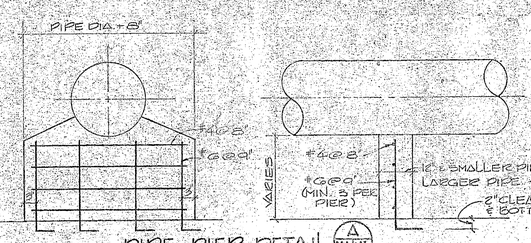
NOTE: TROUGHS & AGITATOR AS SHOWN IN FILTER #5 REQ'D. IN FILTERS 4 & 3

INLET FLUME ACCESS OPENING W/GRATING

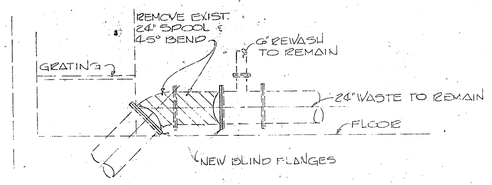
NEW FILTER #3

EXISTING FILTER #2

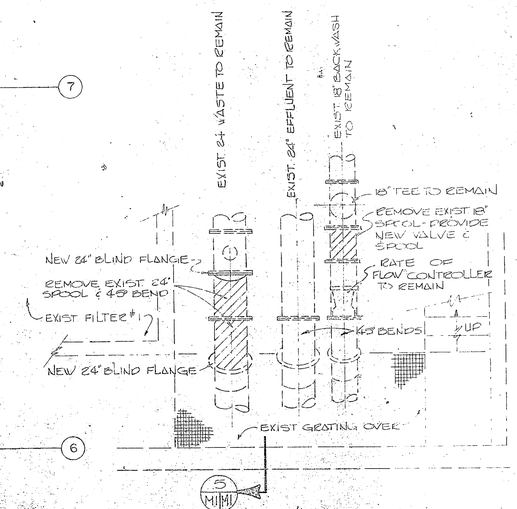
FILTER GALLERY
1/4" = 1'-0"




PIPE PIER DETAIL
NO SCALE
M2, M5

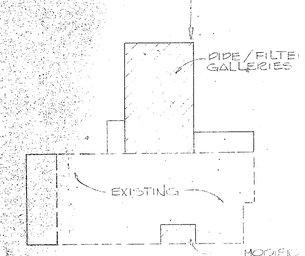



SECTION 5 M1/M1
1/4" = 1'-0"




PLAN
MODIFICATION OF EXISTING WASTE & BACKWASH LINES
1/4" = 1'-0"

FOR LOCATION SEE KEY PLAN




KEY PLAN

LEGEND

(P) PIPE PIER - SEE DETAIL M2 M1/M1

(H) PIPE HANGER

M-1

HENRY VON DESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.

DES. JRB | DR. PYT. | CHK. JRB
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY: DATE
FIRM MEMBER — PRINCIPAL
EFD. FP. TYPE | RVD.
HD. | DIR.
APPROVED: DATE
ACTIVITY — SATISFACTORY TO
APPROVED: DATE
FOR EFD FOR COMMANDER NAVFAC

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER WILLIS R. BENSON JR.

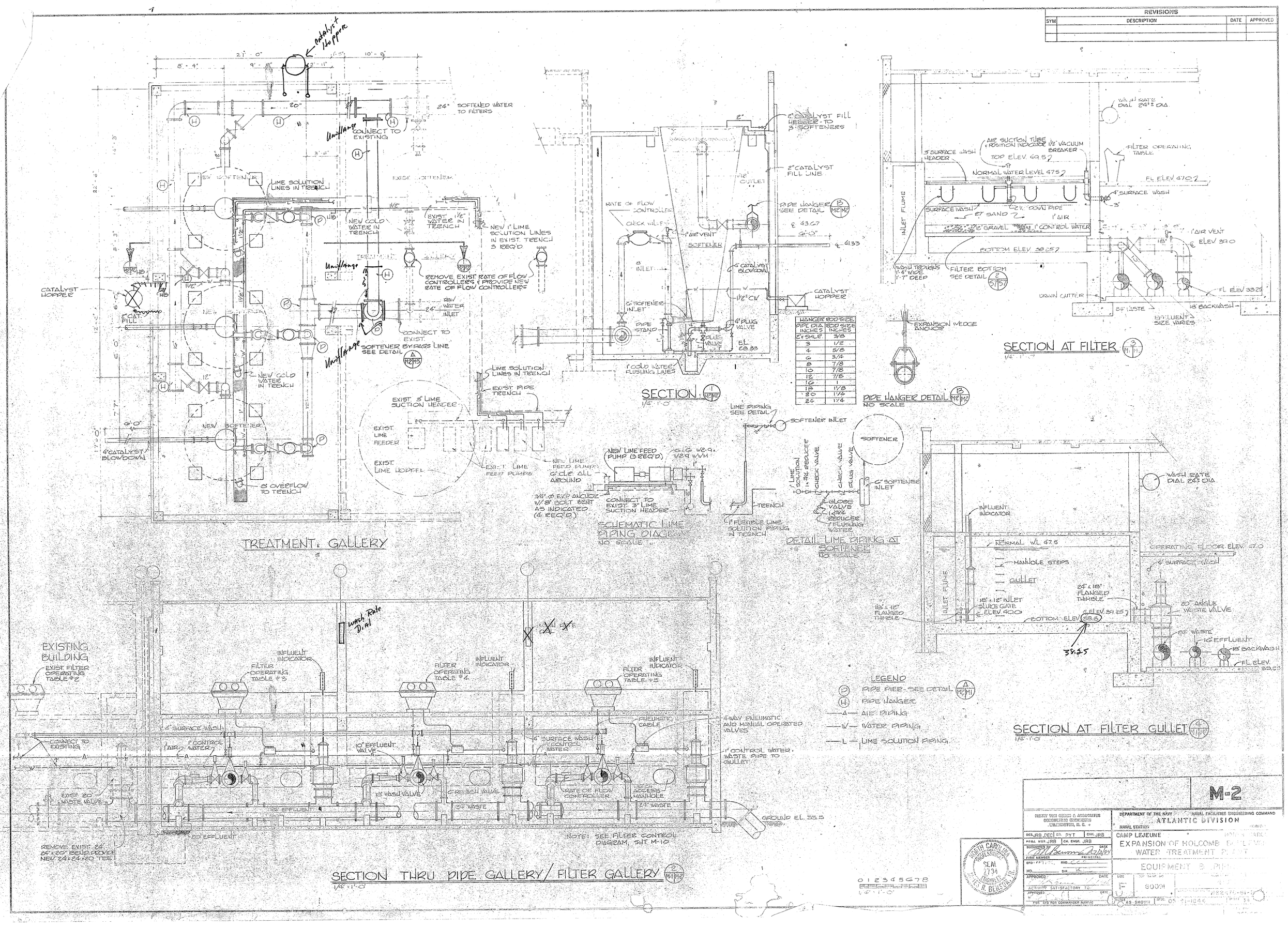
DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING
NAVAL STATION ATLANTIC DIVISION

CAMP LEJEUNE — NORTH C
EXPANSION OF HOLCOMB BOULE
WATER TREATMENT PLANT

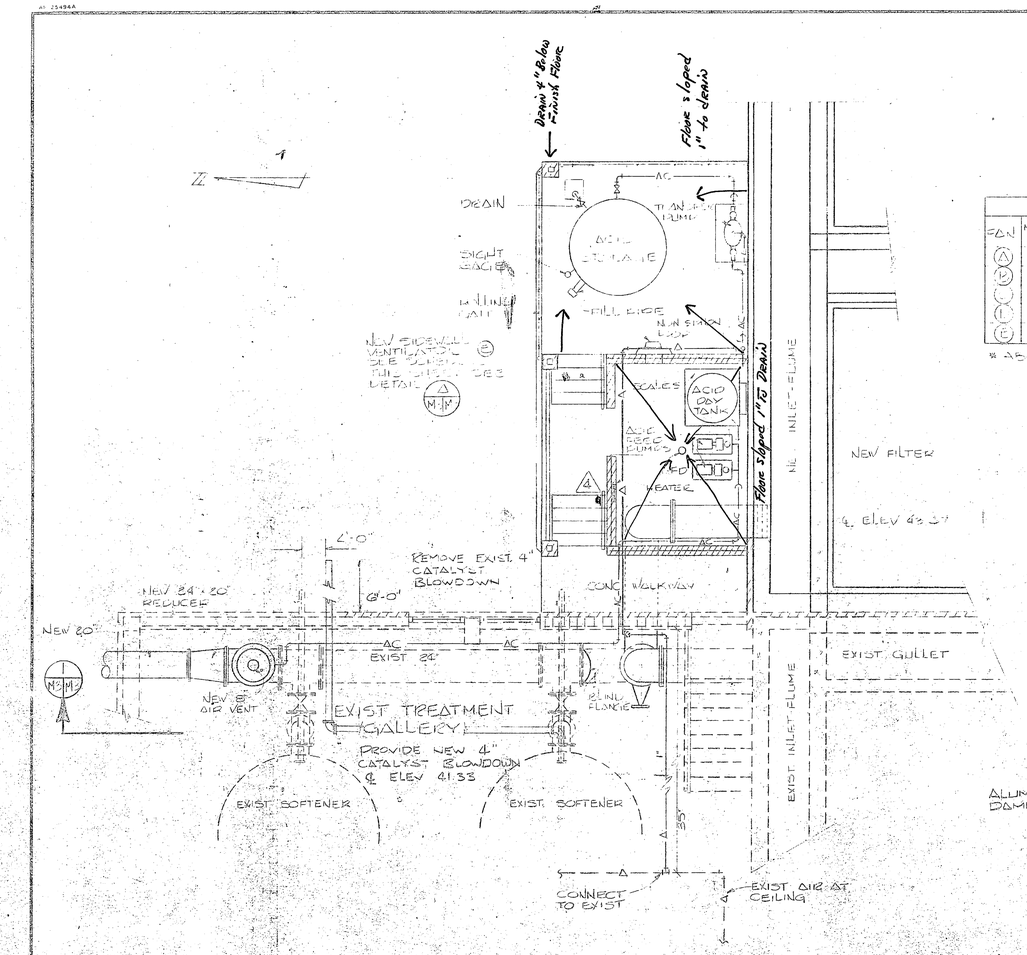
FILTER PIPING & PLAN

SIZE: F | CODE IDENT. NO. 80091 | NAVFAC DRAWING NO. 4107588
SCALE: AS SHOWN | SPEC. 00-81-1644 | CONSTR. CONTR. NO. N62470-8

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |



| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROV |
| | | | |
| | | | |

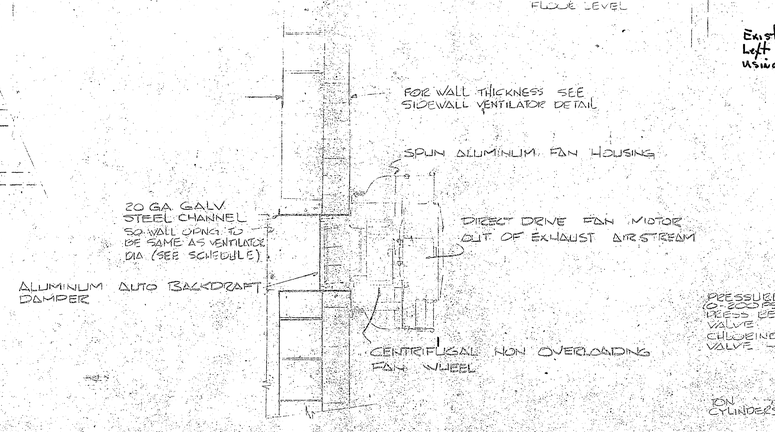


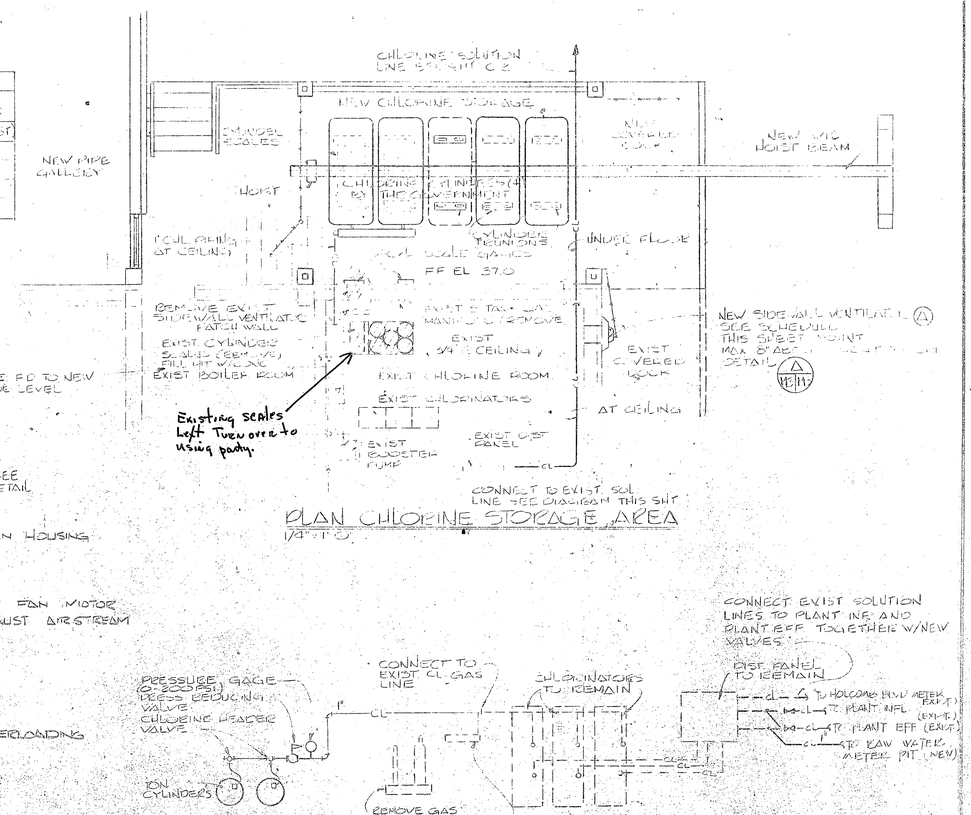

PLAN ACID FEED AREA
1/4" = 1'-0"

| SIDEWALL VENTILATOR SCHEDULE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| FAN | MINIMUM CFM | HP | STATIC PRESS. IN. W.G. | DIA | RPM | VOLTAGE | MOUNTING HEIGHT* | WALL THKNS |
| A | 1870 | 1/4 | 1/8 | 18" | 860 | 120 V 1Ø | 5' AFF | 12" (EXIST) |
| B | 2350 | 1/2 | 1/4 | 8" | 1300 | 120 V 1Ø | 5' AFF | 8" |
| C | 9850 | 1/12 | 1/4 | 12" | 11400 | 120 V 1Ø | 5' AFF | 12" |
| D | 3000 | 1/8 | 1/8 | 10" | 1550 | 120 V 1Ø | 5' AFF | 12" |
| E | 1200 | 1/100 | 1/8 | 8" | 1300 | 120 V 1Ø | 5' AFF | 8" |

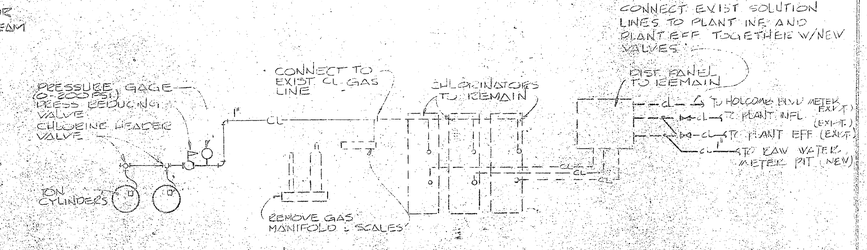
* ABOVE FINISHED FLOOR

DETAIL SIDEWALL VENTILATOR
NO SCALE

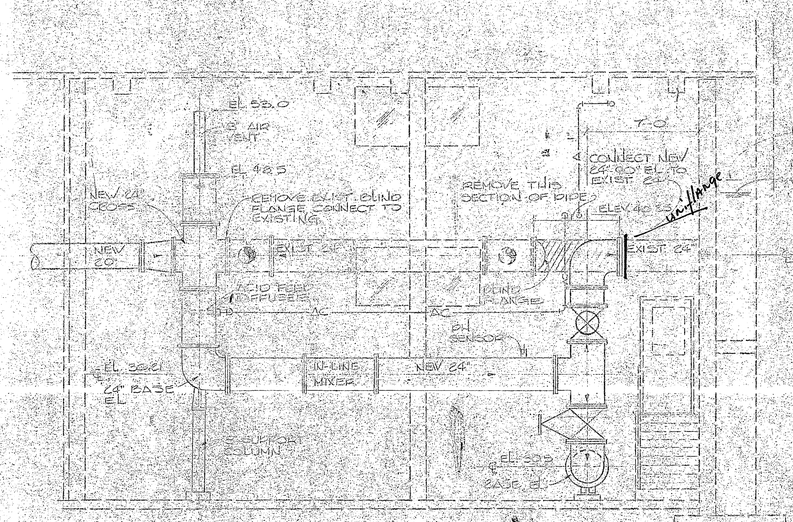



PLAN CHLORINE STORAGE AREA
1/4" = 1'-0"

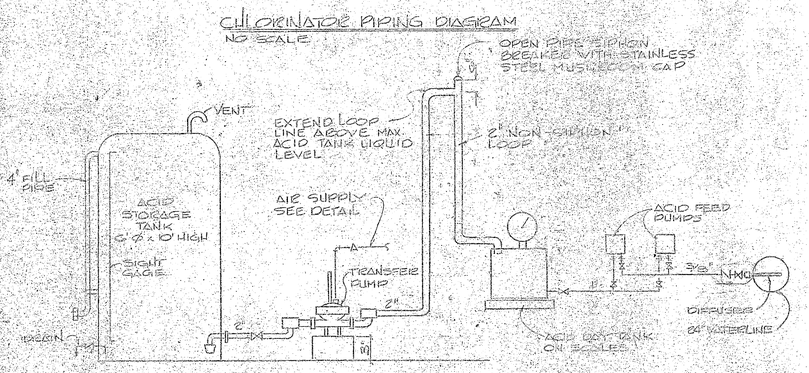



CHLORINATOR PIPING DIAGRAM
NO SCALE

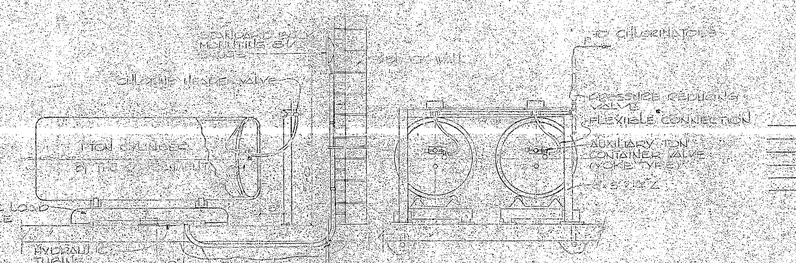



SECTION
1/4" = 1'-0"


AIR SUPPLY TO TRANSFER PUMP
NO SCALE




ACID PIPING SYSTEM DIAGRAM
NO SCALE




DETAILS - CHLORINE GAS PIPING
NO SCALE

LEGEND
- A — AIR PIPING
- AC — ACID PIPING
- C — CHLORINE PIPING
- GV — GATE VALVE
- GV — GLOBE VALVE
- CV — CHECK VALVE

GRAPHIC SCALE
0 1 2 3 4 5 6 8
1/4" = 1'-0"

M-3

HENRY VON OEHSEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VIRGINIA

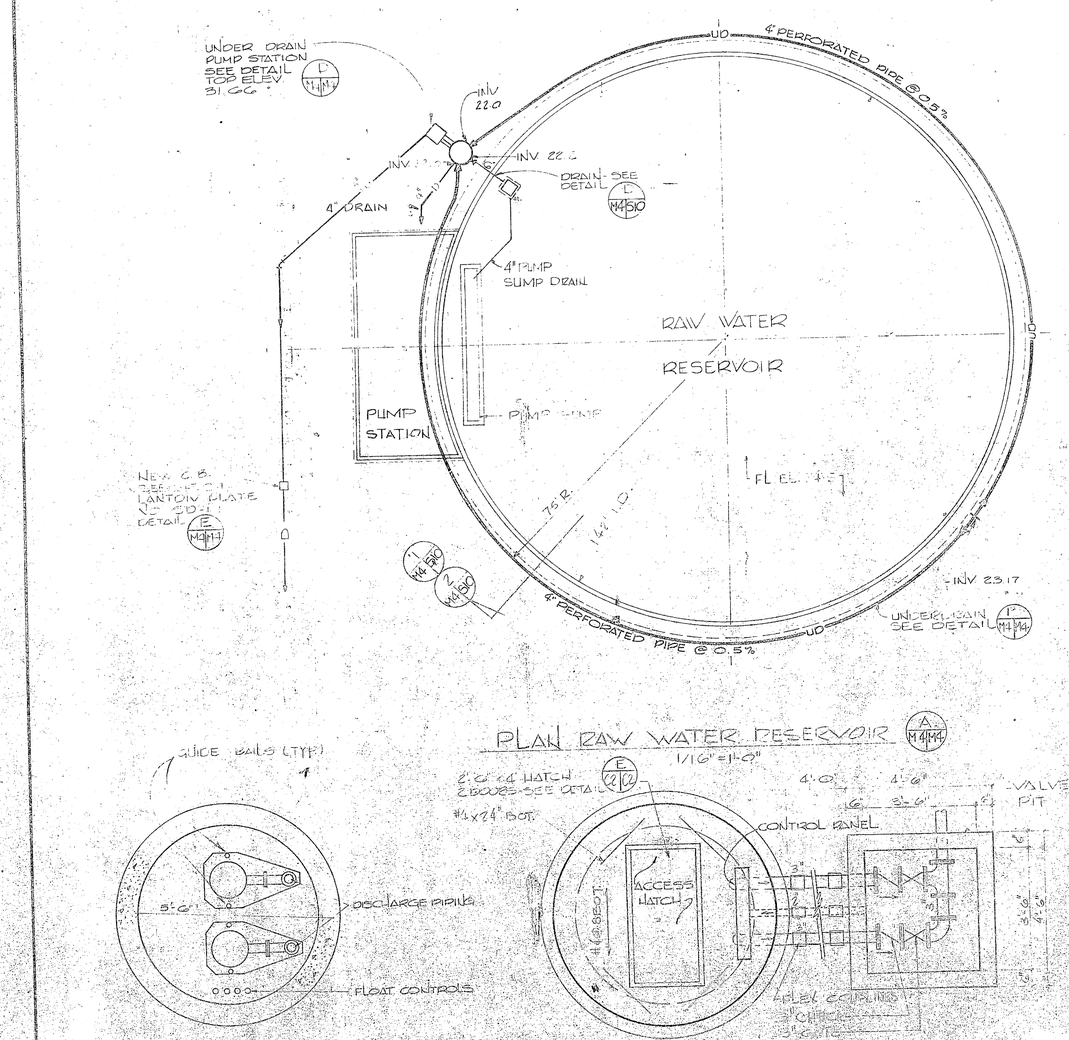
DES. JRB | DR. PYT | CHK. JRB
PROJ. ENGR. JRB | CH. ENGR. JRB
SUBMITTED BY: 7/6/64
FIELD MEMBER | PRINCIPAL
EFD PROJECT ENGR. | RVD
HD | DIR.
APPROVED BY: DATE 7/7/64
ACTIVITY - SATISFACTORY TO: DATE
APPROVED: DATE
FOR EFD FOR COMMANDER NAVFAC

CAMP LEJEUNE NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
ACID AND CHLORINE SYSTEMS

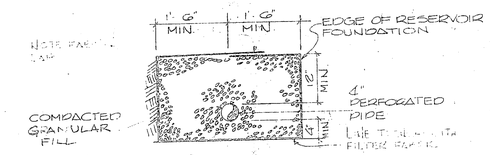
| SIZE | CODE IDENT. NO | NAVFAC DRAWING NO |
|---|---|---|
| F | 80091 | 4107568 |
| | | CONSTR. CONTR. NO N62470-81-B-1644 |
| SCALE AS SHOWN | SPEC. 05-81-1644 | SHEET 35 OF 71 |

NORTH CAROLINA PROFESSIONAL SEAL 2794 JAMES R. BRADSHAW

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |

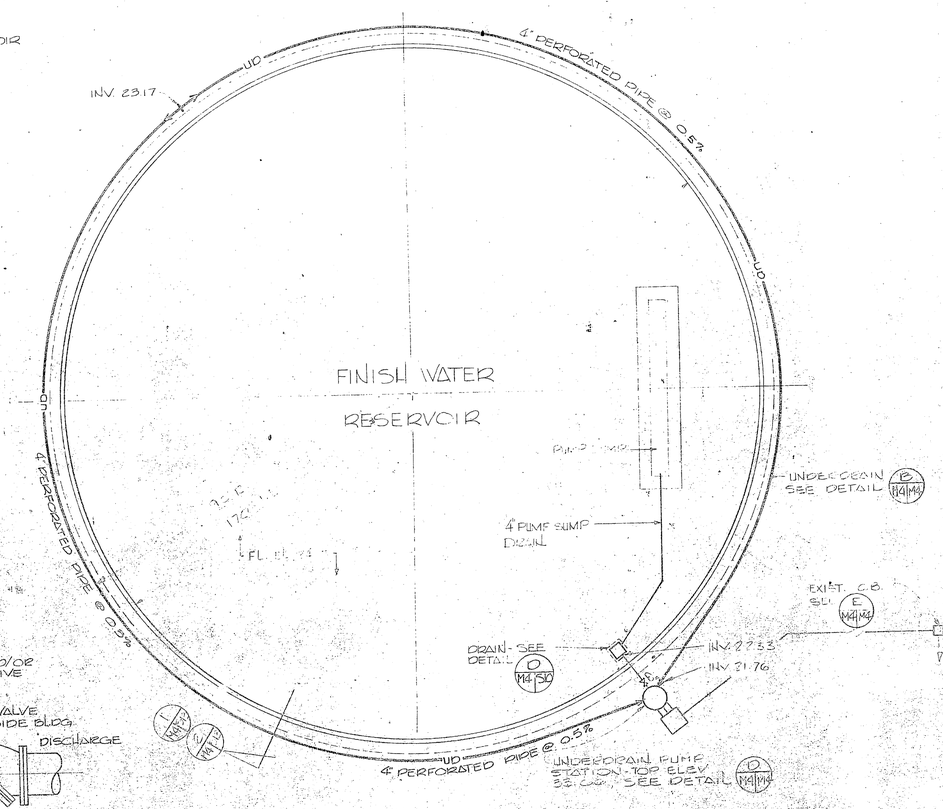



PLAN RAW WATER RESERVOIR
1/16" = 1'-0"




TYPICAL RESERVOIR UNDERDRAIN DETAIL
NO SCALE

| WELL PUMP SCHEDULE | | | | | |
|---|---|---|---|---|---|
| WELL NO | GPM | TDH FEET | RPM | HP | ELECTRICAL |
| 1 | 260 | 124 | 1750 | 15 | 3φ - 208V |
| 2 | 260 | 128 | 1750 | 15 | 3φ - 208V |
| 3 | 260 | 133 | 1750 | 15 | 3φ - 208V |
| 4 | 260 | 139 | 1750 | 15 | 3φ - 208V |
| 5 | 260 | 93 | 1750 | 10 | 3φ - 208V |
| 6 | 260 | 100 | 1750 | 10 | 3φ - 208V |
| 7 | 260 | 79 | 1750 | 10 | 3φ - 208V |
| 8 | 260 | 84 | 1750 | 10 | 3φ - 208V |
| 9 | 260 | 90 | 1750 | 10 | 3φ - 208V |
| 10 | 260 | 88 | 1750 | 10 | 3φ - 208V |
| 11 | 260 | 143 | 1750 | 15 | 3φ - 208V |
| 12 | 260 | 149 | 1750 | 15 | 3φ - 208V |
| 13 | 260 | 156 | 1750 | 15 | 3φ - 208V |
| 14 | 260 | 160 | 1750 | 20 | 3φ - 208V |
| 15 | 260 | 102 | 1750 | 10 | 3φ - 208V |
| 16 | 260 | 100 | 1750 | 10 | 3φ - 208V |
| 17 | 260 | 190 | 1750 | 20 | 3φ - 208V |
| 18 | 260 | 201 | 1750 | 20 | 3φ - 208V |
| 19 | 260 | 224 | 1750 | 20 | 3φ - 208V |
| 20 | 260 | 79 | 1750 | 10 | 3φ - 208V |



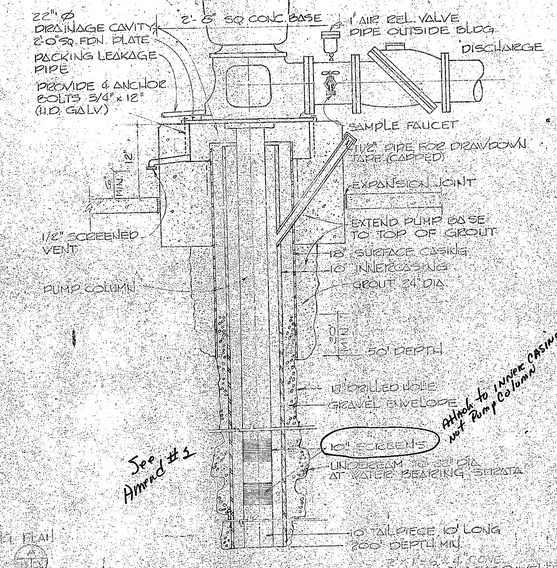


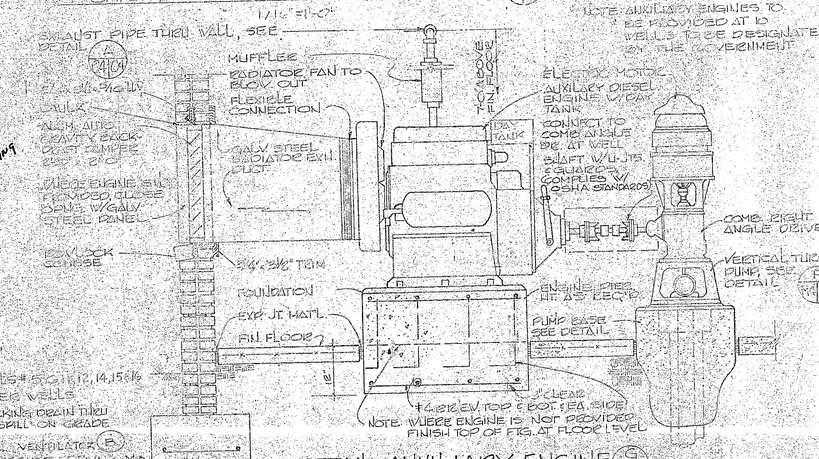


PIT PLAN

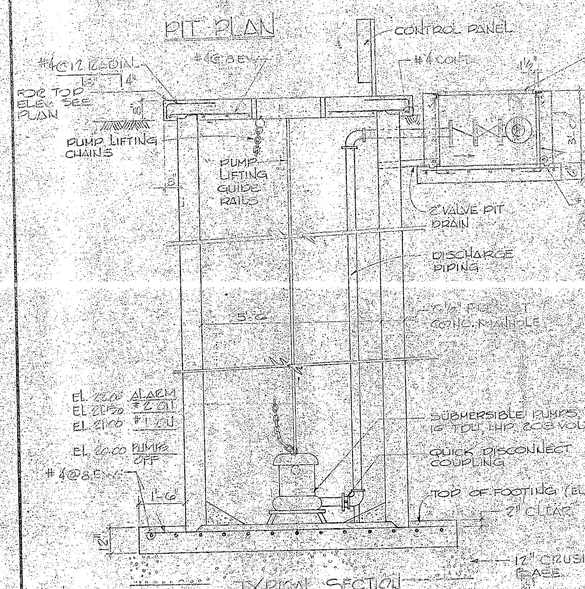



TOP PLAN

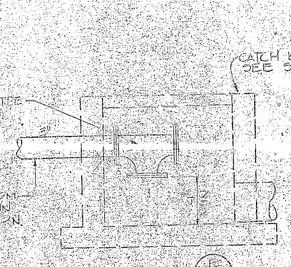


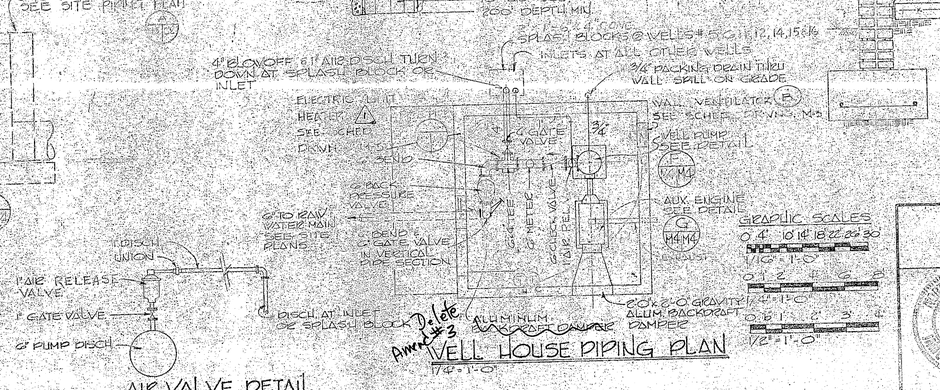

DETAIL - AUXILIARY ENGINE
NO SCALE




TYPICAL SECTION UNDER DRAIN PUMP STATION




DETAIL




WELL HOUSE PIPING PLAN
1/4" = 1'-0"


AIR VALVE DETAIL
NTS

GRAPHIC SCALES
1/16" = 1'-0"
1/4" = 1'-0"
1/2" = 1'-0"

M-4

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NORFOLK, VIRGINIA
NAVAL STATION
CAMP LEJEUNE — NORTH CAROLINA

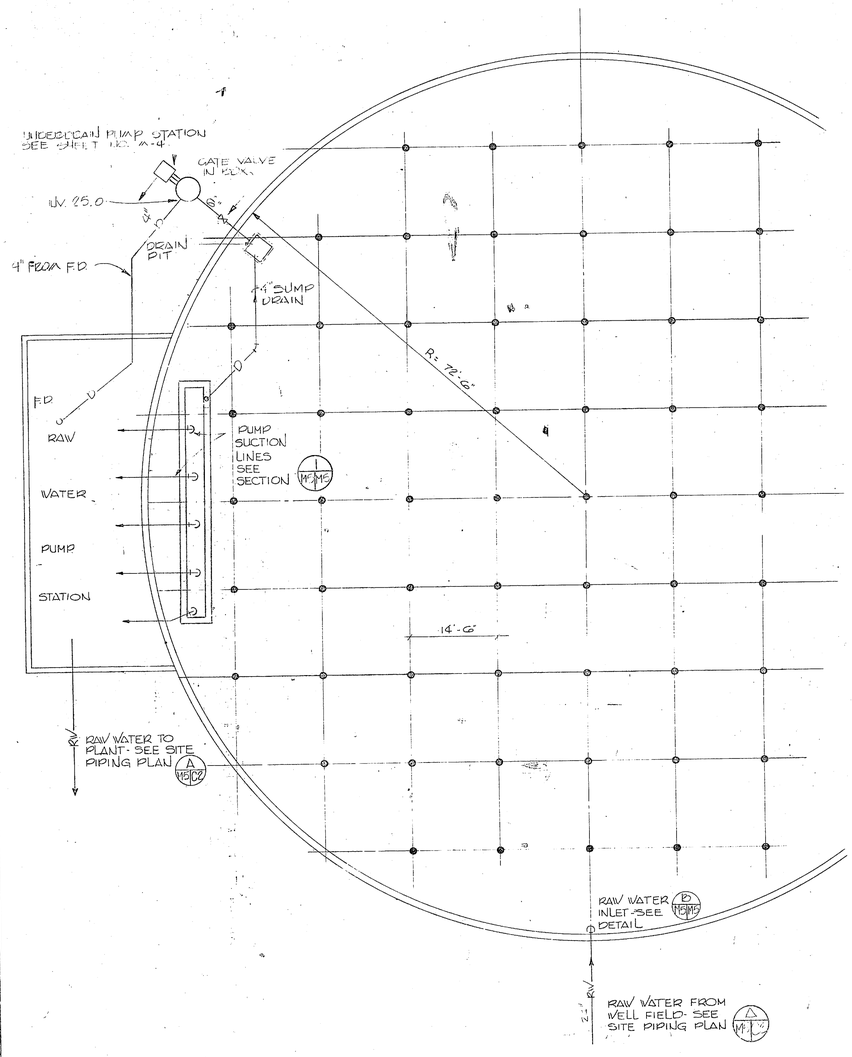
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

RESERVOIR UNDERDRAIN SYSTEM

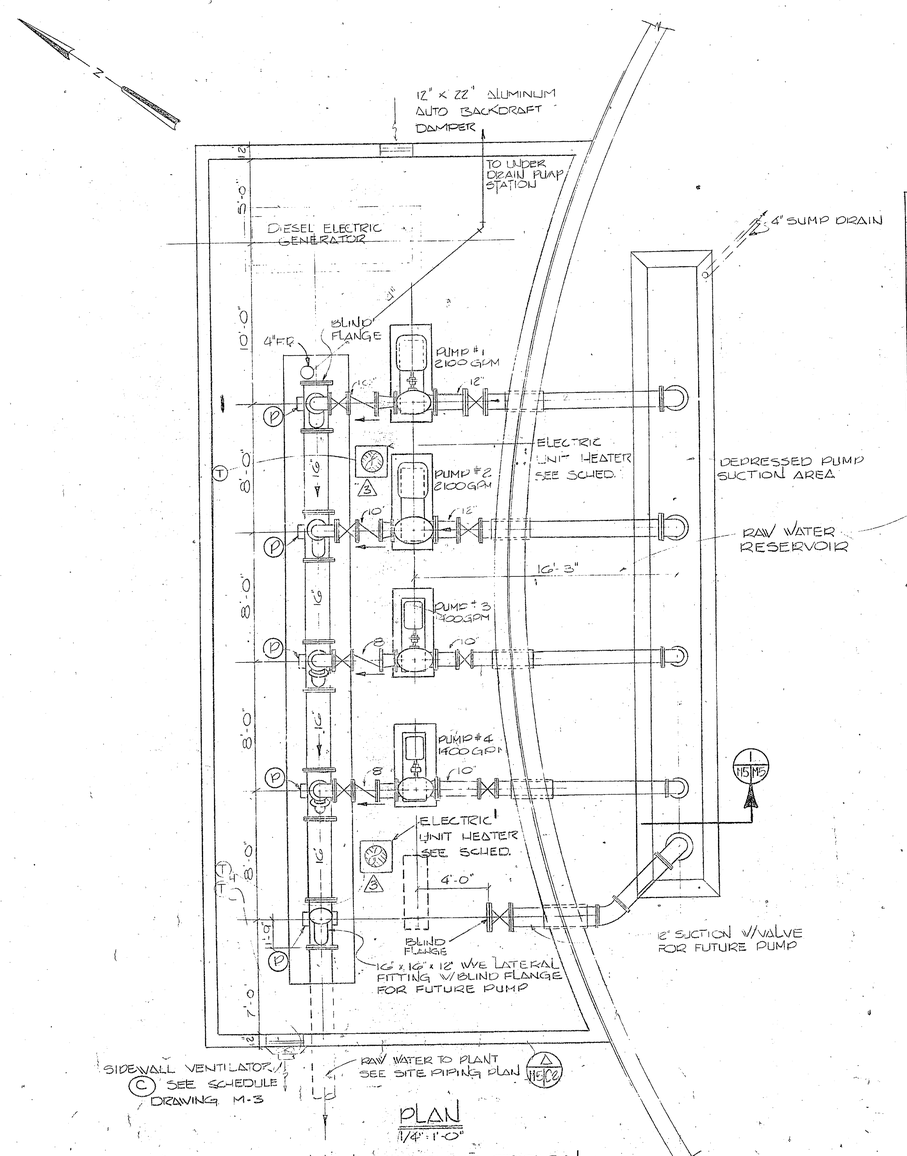
| SIZE | CODE IDENT. NO | NAVFAC DRAWING NO |
|---|---|---|
| F | 80091 | 4107569 |
| | | CONSTR. CONTR. NO N62470-81-B-1644 |
| SCALE AS SHOWN | SPEC. 05-81-1844 | SHEET 36 |

EFD DWG 20

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |




PIPING PLAN - RAW WATER RESERVOIR
3/32" = 1'-0"

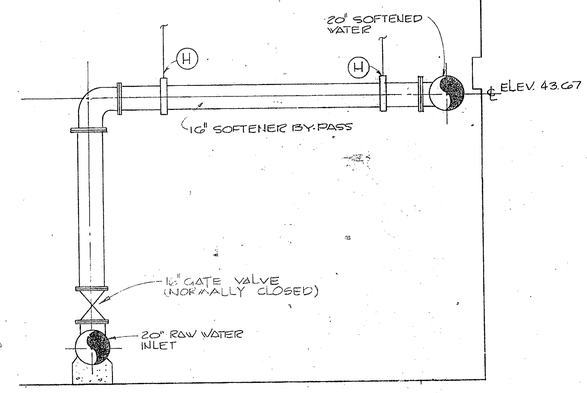



PLAN
1/4" = 1'-0"

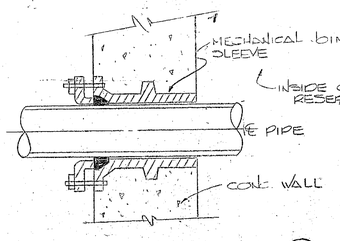
RAW WATER PUMP STATION

| ELECTRIC HEATER SCHEDULE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| UNIT | TYPE | LOCATION | MIN. CFM | MBH | MIN. KW | HP | VOLT | STAGES | MTG. HT.* |
| 1 | HORIZONTAL UNIT HEATER | WELL HOUSES | 265 | 10.01 | 2.93 | 1/125 | 208V 3Ø | 1 | 6'-0" |
| 2 | VERTICAL UNIT HEATER | FINISH WATER PUMP HOUSE | 444 | 16.8 | 4.92 | 1/20 | ↓ | 2 | 8'-0" |
| 3 | ↓ | RAW WATER PUMP HOUSE | 431 | 16.3 | 4.78 | ↓ | ↓ | 2 | 8'-0" |
| 4 | FORCED AIR WALL INSERT HEATER | ACID FEED ROOM | 100 | 4.0 | 1.17 | 1/125 | 120V. 1Ø | 1 | 18" |

* ABOVE FINISHED FLOOR

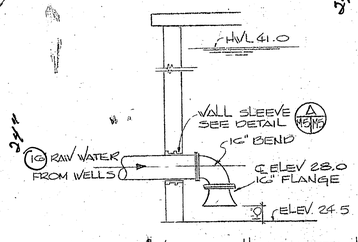



SOFTENER BY-PASS DETAIL
N.T.S.

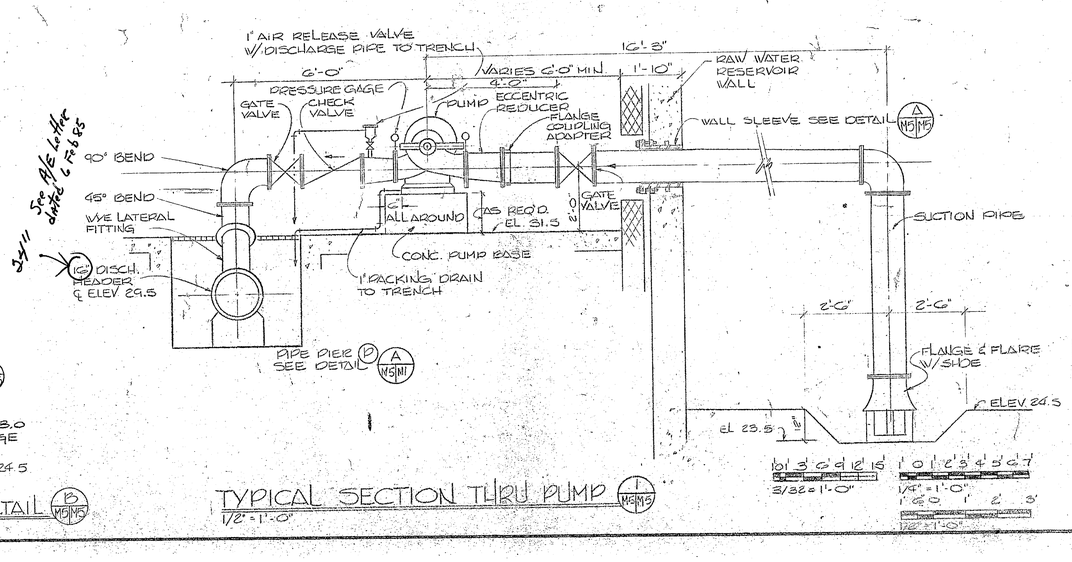



TYPICAL WALL SLEEVE
NO SCALE

NOTE: PROVIDE SLEEVE AT EACH PIPE PASSING THRU RESERVOIR WALL




RAW WATER INLET DETAIL
NO SCALE




TYPICAL SECTION THRU PUMP
1/2" = 1'-0"

| RAW WATER PUMP SCHEDULE | | | | | |
|---|---|---|---|---|---|
| PUMP NO. | GPM | TDH FEET | RPM | HP | ELECTRICAL |
| 1 | 2100 | 39 | 1200 | 30 | 3Ø - 460V. |
| 2 | 2100 | 39 | 1200 | 30 | 3Ø - 460V. |
| 3 | 1400 | 39 | 1200 | 20 | 3Ø - 460V |
| 4 | 1400 | 39 | 1200 | 20 | 3Ø - 460V. |
| | | | | | |

M-5

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA

CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

PUMP STATION PIPING PLANS

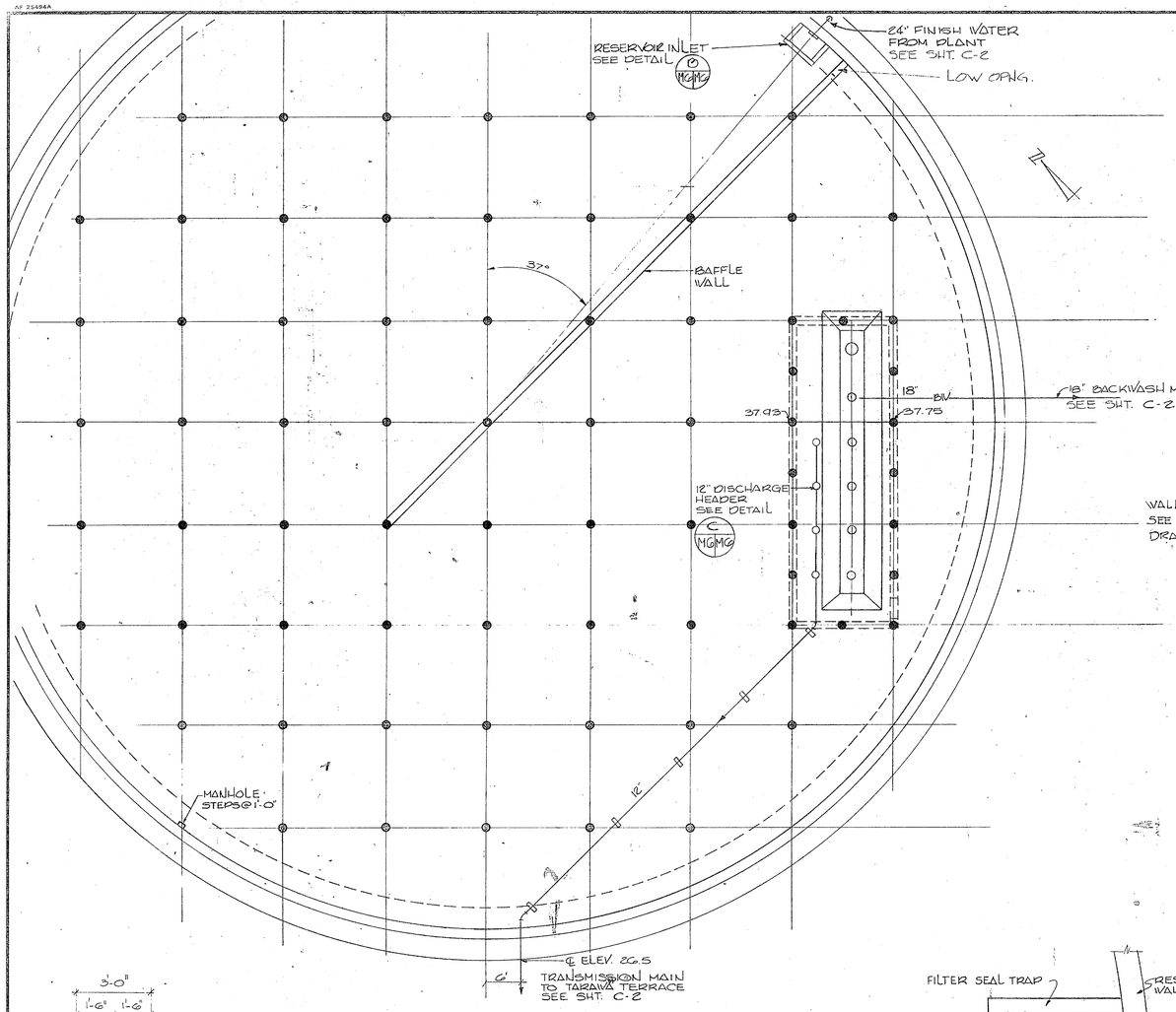
DES. JRB | DR. PYT | CHK. JRB
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY — DATE 7/6/84
FIRM MEMBER — PRINCIPAL
EFD: FP — RVD — HD — DIR
APPROVED — DATE
ACTIVITY - SATISFACTORY TO
APPROVED — DATE
FOR EFD FOR COMMANDER NAVFAC

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. BERNDT, JR.

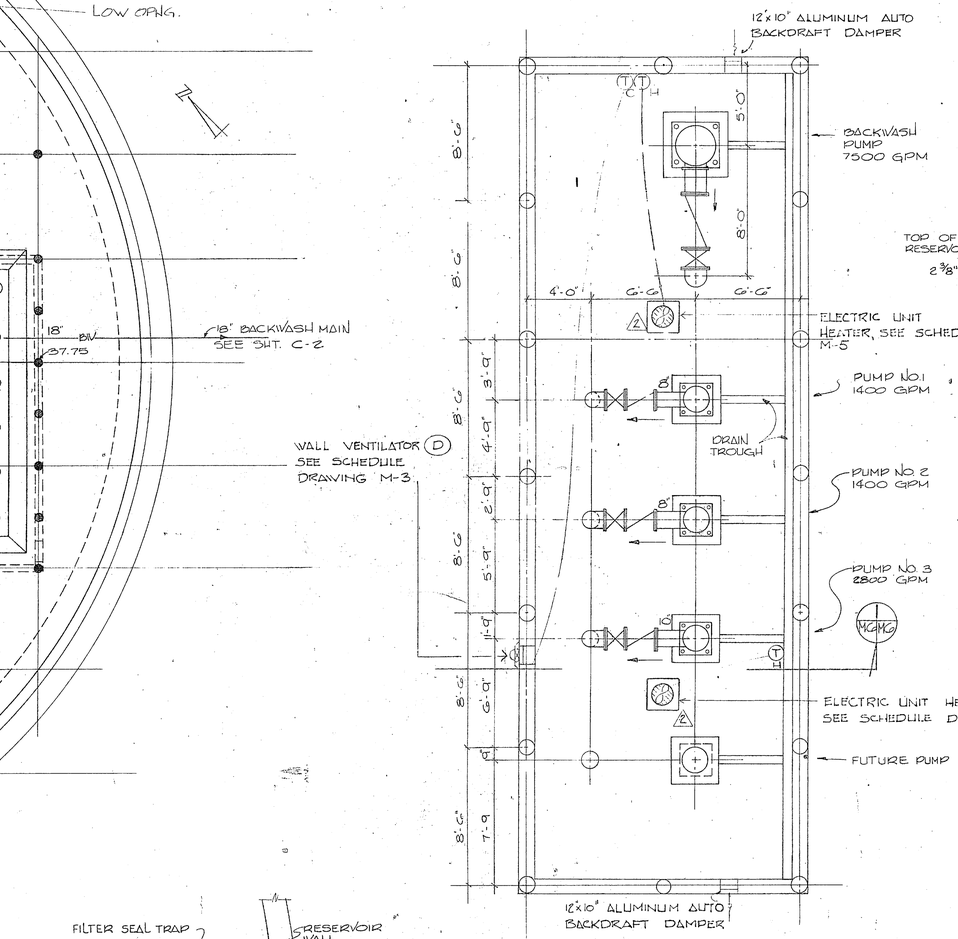
SIZE: F | CODE IDENT. NO. 80091 | NAVFAC DRAWING NO. 4107570
CONTRA. CONTR. NO. N62470-81-B-1644
SCALE | SPEC. 08-81-1644 | SHEET 37 OF 74
EFD ESS. NO. 20757

AF 25494A

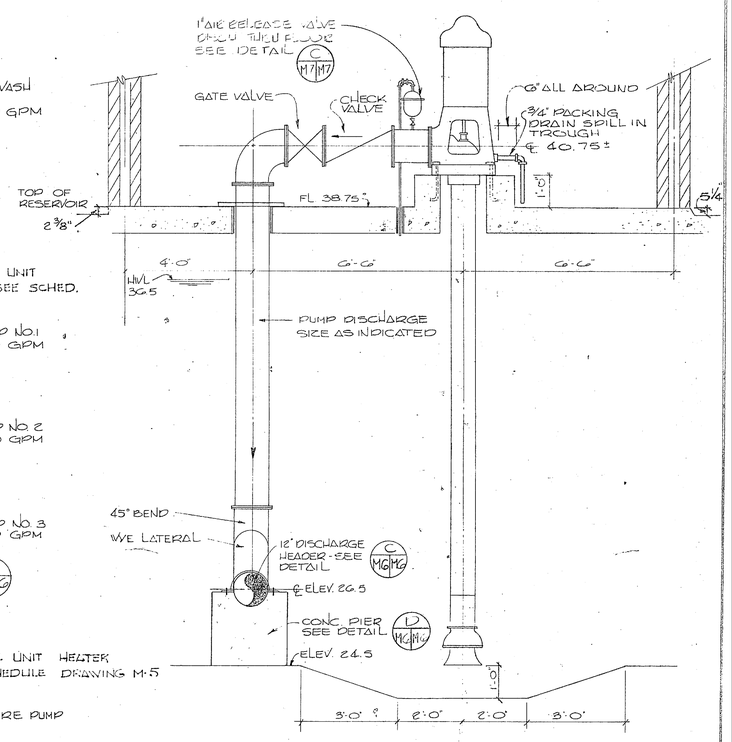
| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |



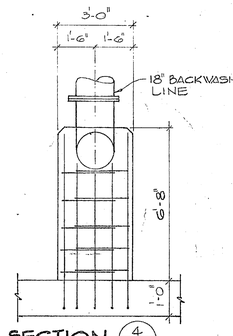

PIPING PLAN - FINISH WATER RESERVOIR
3/32" = 1'-0"



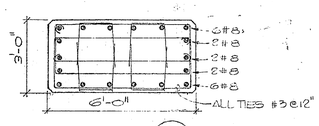

PUMP HOUSE PLAN
1/4" = 1'-0"



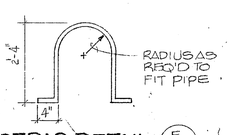

PUMP HOUSE SECTION 1 M6/M6
1/2" = 1'-0"



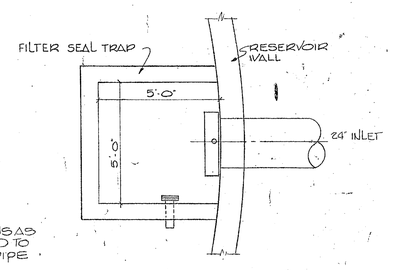

SECTION 4 M6/M6
3/8" = 1'-0"



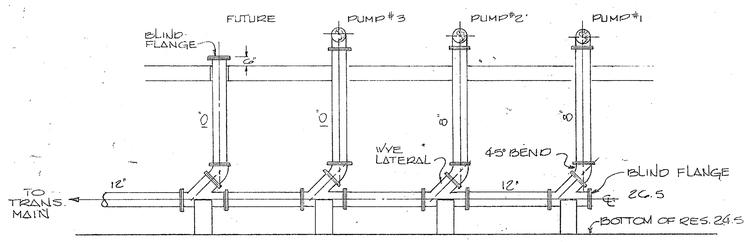

SECTION 3 M6/M6
3/8" = 1'-0"




STRAP DETAIL E M6/M6
NO SCALE

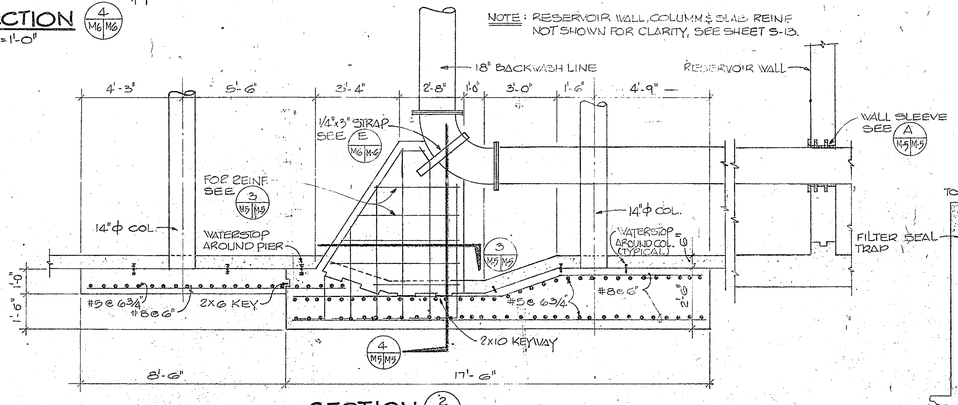



PLAN

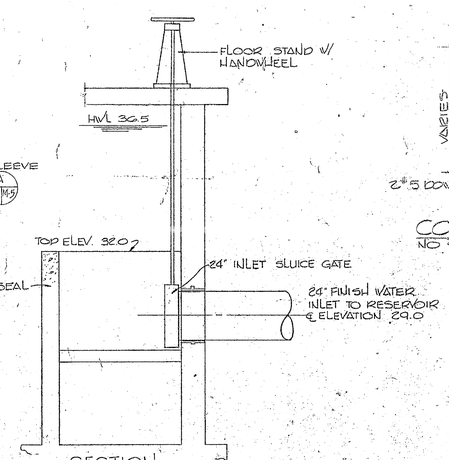



DISCHARGE HEADER DETAIL C M6/M6
1/4" = 1'-0"

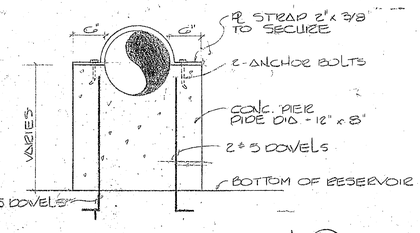
NOTE: RESERVOIR WALL, COLUMN & SLAB REINF NOT SHOWN FOR CLARITY, SEE SHEET S-13.




SECTION 2 M6/M6
3/8" = 1'-0"
S-13

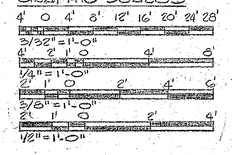



SECTION
INLET DETAIL B M6/M6
NO SCALE




CONCRETE PIER DETAIL D M6/M6
NO SCALE

GRAPHIC SCALES




FINISH WATER PUMP SCHEDULE

| PUMP NO | GPM | TDH FEET | RPM | HP | ELECTRICAL |
|---|---|---|---|---|---|
| 1 | 1400 | 39 | 1200 | 20 | 3ϕ - 460 V. |
| 2 | 1400 | 39 | 1200 | 20 | 3ϕ - 460 V. |
| 3 | 2800 | 74 | 1750 | 75 | 3ϕ - 460 V. |
| BACKWASH | 7500 | 50 | 1200 | 125 | 3ϕ - 460 V. |
| BLDG. TT-39A | 2000 | 175 | 1750 | 125 | 3ϕ - 460 V. |
| 5-BLDG. GT1 | 3500 | 154 | 1750 | 200 | 3ϕ - 460 V. |

M-6

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMM.
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRG.

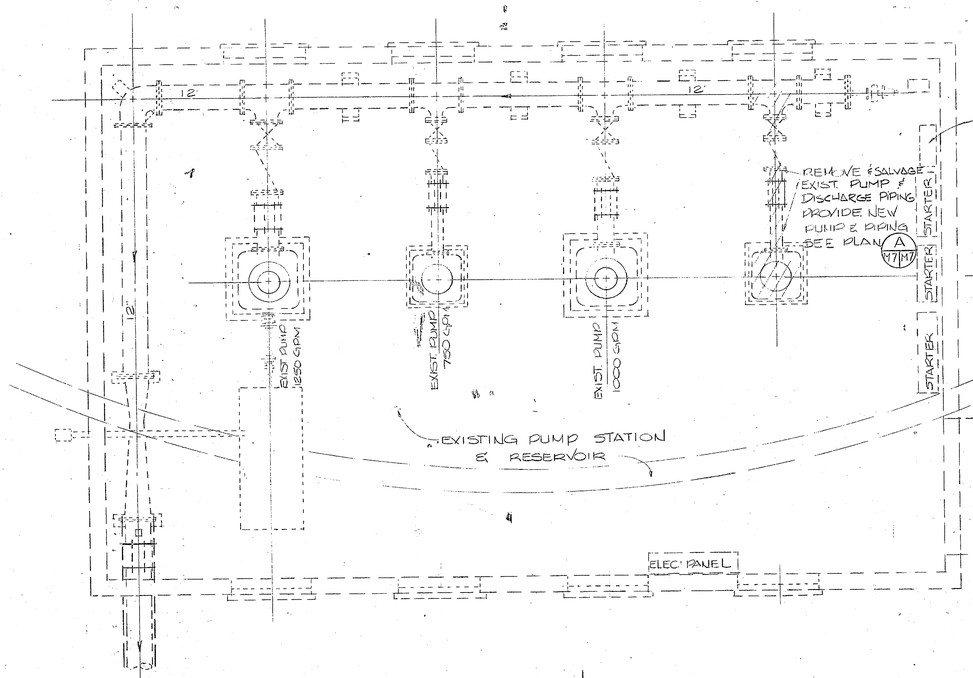
DES. JRB | DR. PYT | CHK. JRB
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY — DATE 7/2/84
FIRM MEMBER — PRINCIPAL
EFD FP — RVD CCS
HD — DIR
APPROVED — DATE 7/5/84
ACTIVITY - SATISFACTORY TO
APPROVED — DATE
FOR EFD FOR COMMANDER, NAVFAC

CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

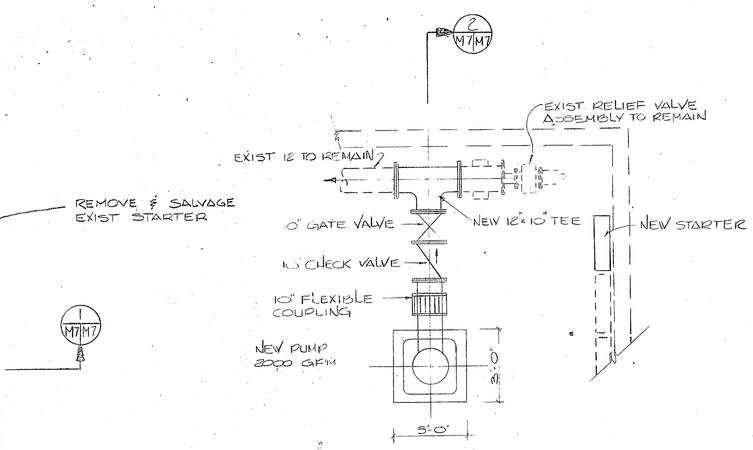
FINISH WATER PUMPING STATION

SIZE F | CODE IDENT NO. 80091 | NAVFAC DRAWING NO. 4107571
CONTR. CONTR NO. N62470-81-B-16-
SCALE AS SHOWN | SPEC. 05-81-1644 | SHEET 38
EFD DWG. NO. 2075

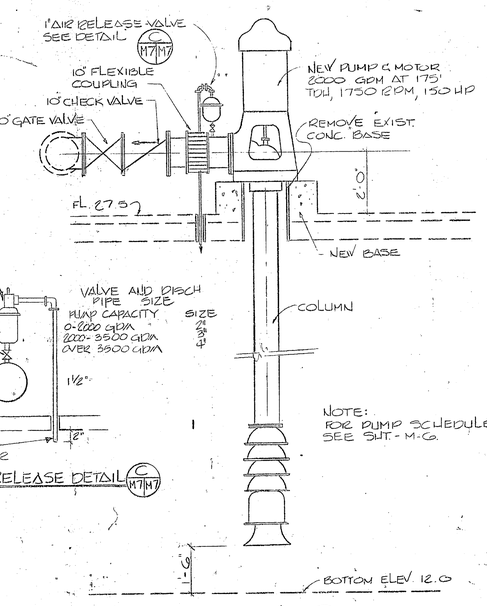
| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |



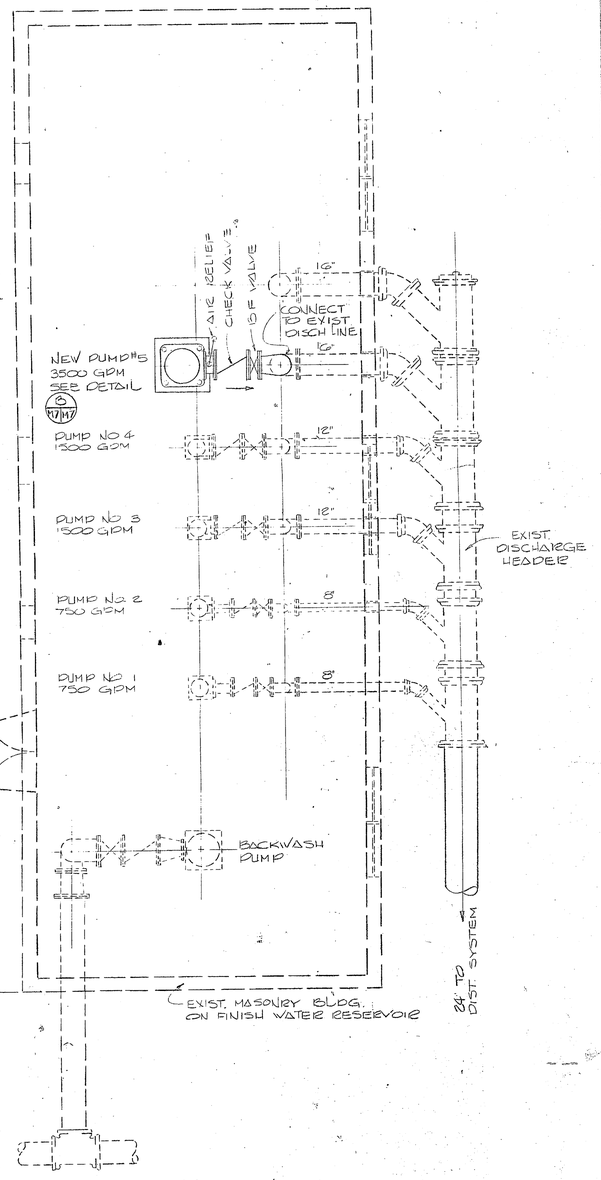

PLAN
3/8" = 1'-0"




PLAN A M7/M7
3/8" = 1'-0"

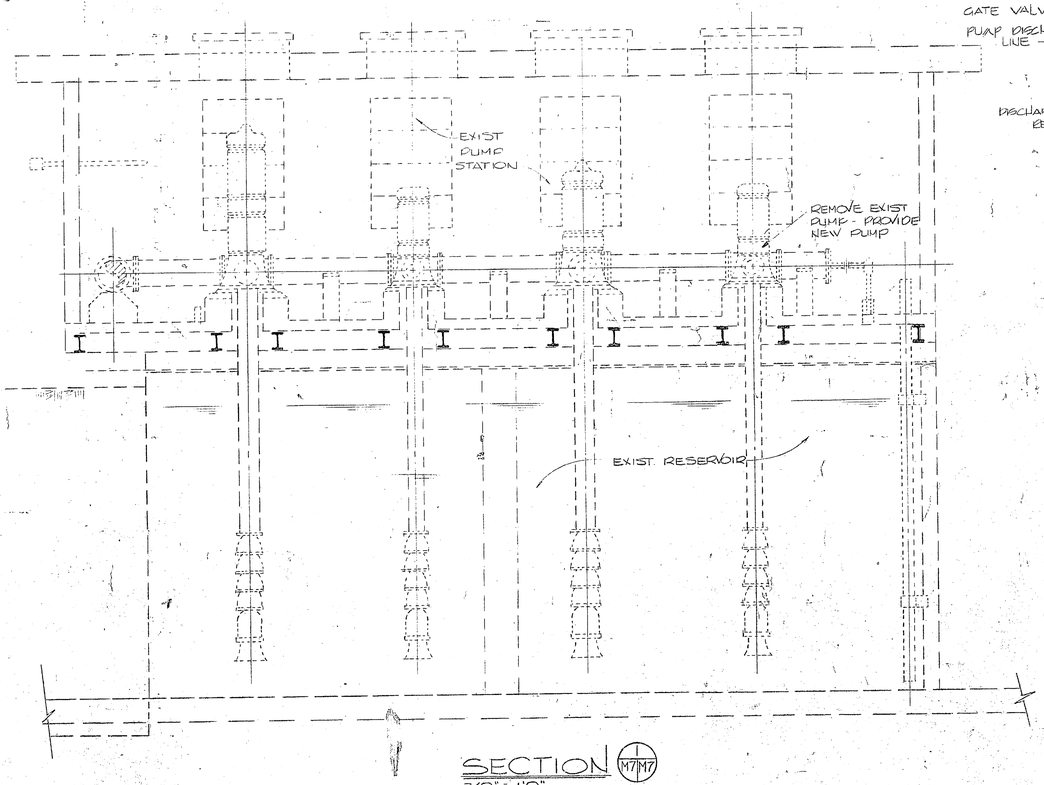



SECTION 2 M7/M7
NEW PUMP - BLDG. FT-39A
SCALE: 1/2" = 1'-0"

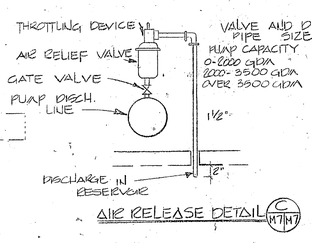



PLAN - HOLCOMB BLVD PUMPING STATION
BLDG. NO. 671
SCALE: 1/4" = 1'-0"

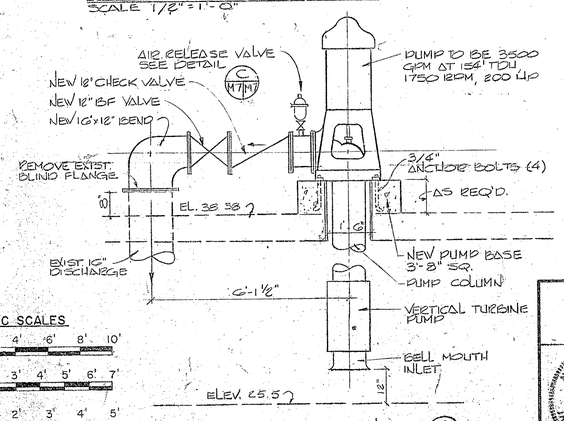
TARAWA TERRACE PUMPING STATION BLDG. TT-39A




SECTION 1 M7/M7
3/8" = 1'-0"

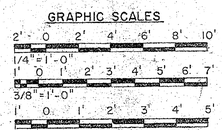



AIR RELEASE DETAIL C M7/M7




DETAIL NEW PUMP NO. 5 B M7/M7
1/2" = 1'-0"

GRAPHIC SCALES




M-7

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DES. JRB | DR. LGL | CHK. JRB
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY: DATE: 7/2/64
FIRM MEMBER PRINCIPAL
EFD: FP RVD
HD DIR
APPROVED: DATE 7/6/64
ACTIVITY - SATISFACTORY TO:
APPROVED: DATE
FOR EFD FOR COMMANDER NAVFAC

NORTH CAROLINA PROFESSIONAL SEAL 2738 ENGINEER JAMES P. BENSON, JR.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA
CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
TARAWA TERRACE PUMPING STATION

| SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 4107572 |

CONSTR. CONTR. NO. N62470-81-B-1644
SCALE: AS SHOWN | SPEC. 05-81-1644 | SHEET 39 OF 74
EFD 855 85
207572

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |

## UNIT HEATER SCHEDULE

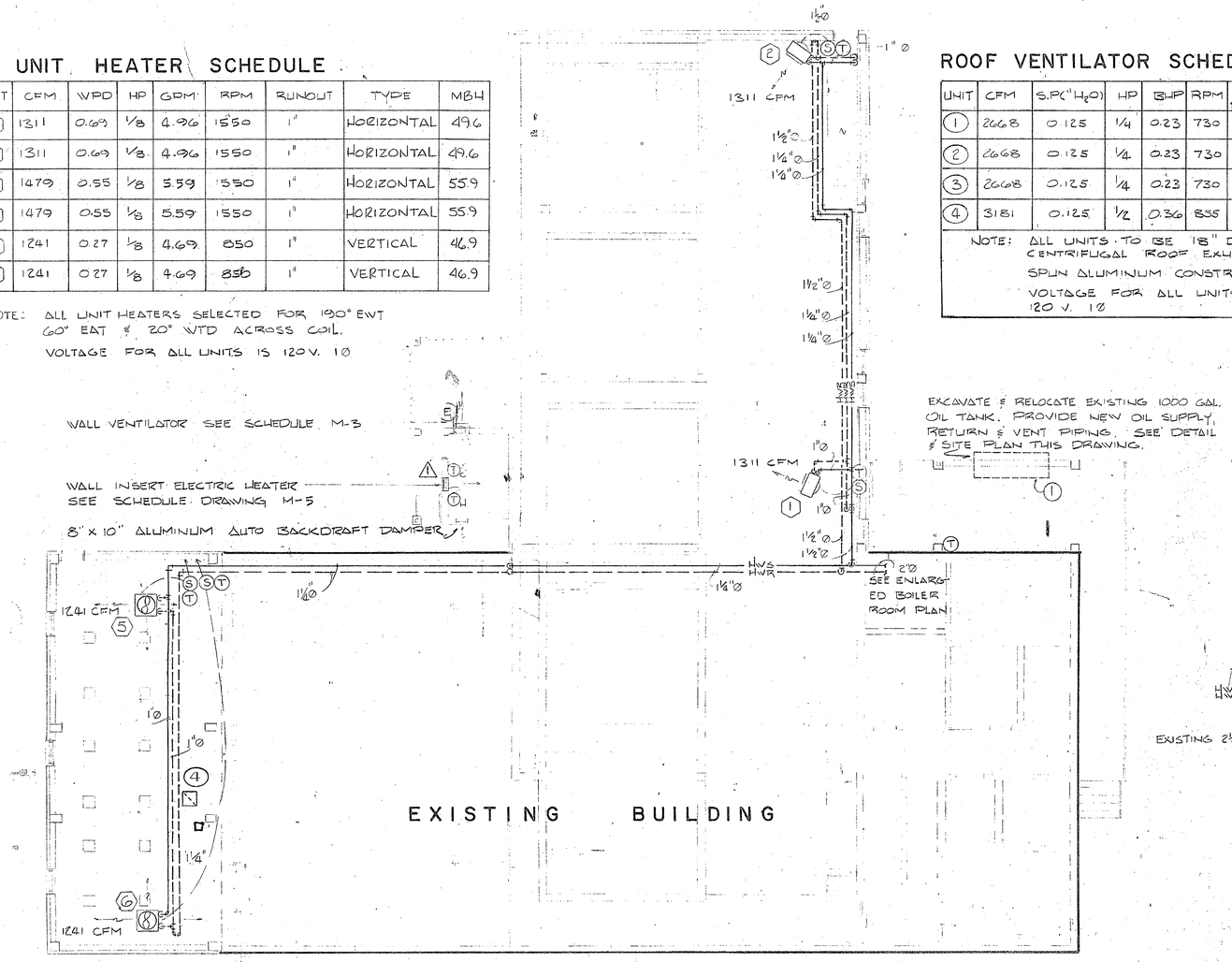
| UNIT | CFM | WPD | HP | GPM | RPM | RUNOUT | TYPE | MBH |
|---|---|---|---|---|---|---|---|---|
| 1 | 1311 | 0.69 | 1/8 | 4.96 | 1550 | 1" | HORIZONTAL | 49.6 |
| 2 | 1311 | 0.69 | 1/8 | 4.96 | 1550 | 1" | HORIZONTAL | 49.6 |
| 3 | 1479 | 0.55 | 1/8 | 5.59 | 1550 | 1" | HORIZONTAL | 55.9 |
| 4 | 1479 | 0.55 | 1/8 | 5.59 | 1550 | 1" | HORIZONTAL | 55.9 |
| 5 | 1241 | 0.27 | 1/8 | 4.69 | 850 | 1" | VERTICAL | 46.9 |
| 6 | 1241 | 0.27 | 1/8 | 4.69 | 850 | 1" | VERTICAL | 46.9 |

NOTE: ALL UNIT HEATERS SELECTED FOR 190° EWT 60° EAT & 20° WTD ACROSS COIL.
VOLTAGE FOR ALL UNITS IS 120 V. 1Ø

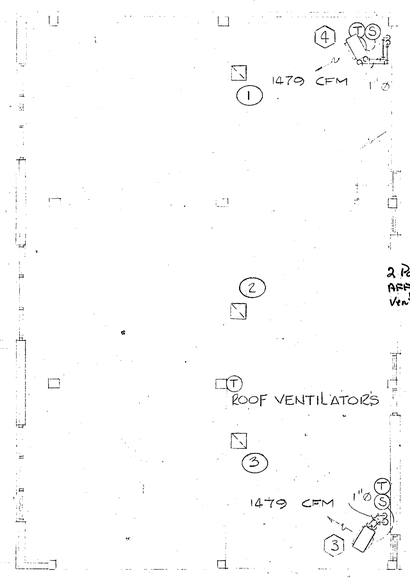
## ROOF VENTILATOR SCHEDULE

| UNIT | CFM | S.P.("$H_2O$) | HP | BHP | RPM | TIP SPEED | ROOF OPENING |
|---|---|---|---|---|---|---|---|
| 1 | 2668 | 0.125 | 1/4 | 0.23 | 730 | 3536 | 20½" |
| 2 | 2668 | 0.125 | 1/4 | 0.23 | 730 | 3536 | 20½" |
| 3 | 2668 | 0.125 | 1/4 | 0.23 | 730 | 3536 | 20½" |
| 4 | 3181 | 0.125 | 1/2 | 0.36 | 855 | 4141 | 20½" |

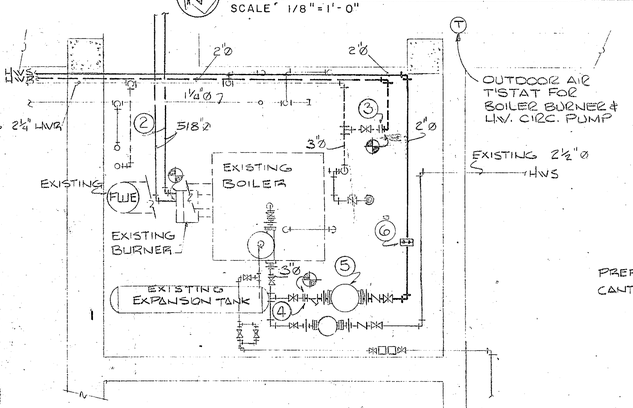
NOTE: ALL UNITS TO BE 18" DIAMETER CENTRIFUGAL ROOF EXHAUSTERS
SPUN ALUMINUM CONSTRUCTION
VOLTAGE FOR ALL UNITS IS 120 V. 1Ø



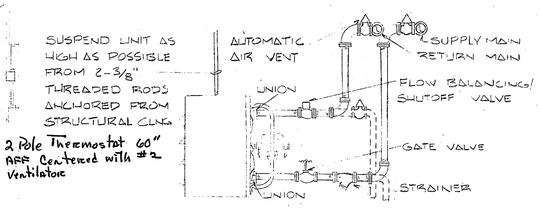

FIRST FLOOR PLAN
SCALE 1/8" = 1'-0"



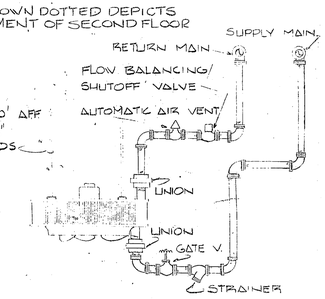

PIPE GALLERY SECOND FLOOR PLAN
SCALE 1/8" = 1'-0"



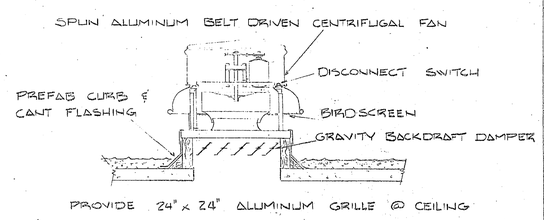

BOILER ROOM PLAN
SCALE 1/2" = 1'-0"



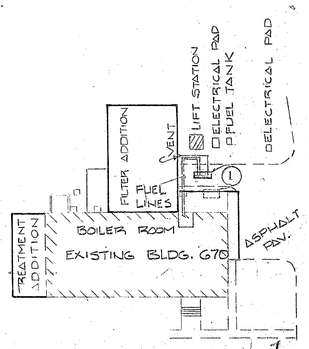

A M8 M8 DETAIL HORIZONTAL UNIT HEATER
NO SCALE
NOTE: PIPING SHOWN DOTTED DEPICTS ARRANGEMENT OF SECOND FLOOR UNITS.



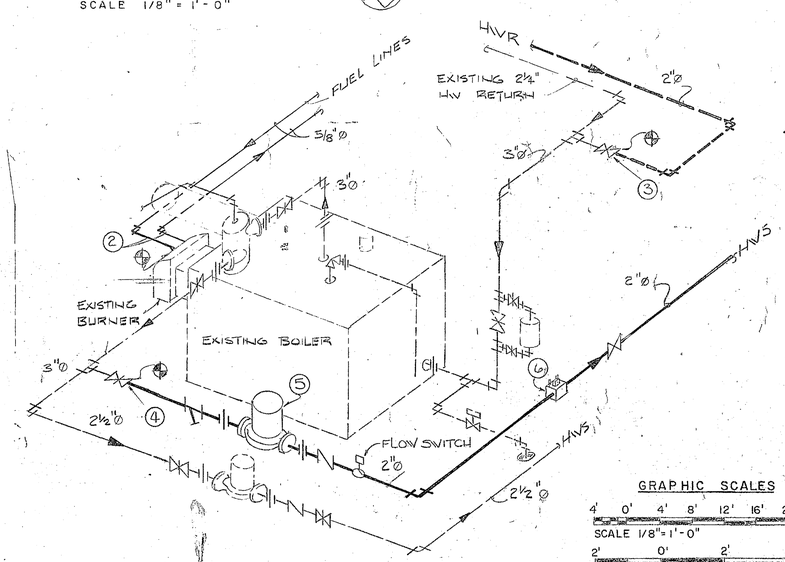

B M8 M8 DETAIL VERTICAL UNIT HEATER
NO SCALE




C M8 M8 DETAIL POWER ROOF VENTILATOR
NO SCALE




BLDG. 670 SITE PLAN
SCALE 1" = 40'




BOILER ROOM PIPING ISOMETRIC
NO SCALE

GRAPHIC SCALES
SCALE 1/8" = 1'-0"
SCALE 1/2" = 1'-0"
SCALE 1" = 40'

## KEYED NOTES

Deleted

1. ~~RELOCATE EXISTING 1000 GALLON UNDERGROUND OIL STORAGE TANK SEE DETAIL 'D' THIS DRAWING.~~
2. REMOVE EXISTING 3/8" OIL SUPPLY & RETURN LINES / PROVIDE NEW 5/8" COPPER SUPPLY & RETURN TUBING. CONNECT W/ EXISTING BURNER. (TYPE 'K' HARD DRAWN COPPER).
3. CONNECT NEW 2" HW RETURN TO EXISTING HW SYSTEM / REMOVE EXISTING CAPPED NIPPLE & EXTEND NEW RETURN FROM GATE VALVE
4. CONNECT NEW 2" HW SUPPLY TO EXISTING HW SYSTEM / REMOVE EXISTING CAPPED NIPPLE & EXTEND NEW SUPPLY FROM GATE VALVE
5. PROVIDE NEW INLINE CENTRIFUGAL HW CIRCULATING PUMP TO PERFORM AS FOLLOWS:

| GPM | FT. HEAD | BHP | HP | RPM | VOLTAGE | MIN. EFFICIENCY |
|---|---|---|---|---|---|---|
| 30.48 | 27' | 0.39 | 1/2 | 1750 | 120V. 1Ø | 50% |

6. PROVIDE INLINE BALANCING TYPE FLOW MEASURING DEVICE POSITION MINIMUM 3' DOWNSTREAM OF ELBOW. FLOW SHALL BE 30.48 GPM WHEN SYSTEM IS BALANCED.

## LEGEND

GATE VALVE — TEMP. PRESSURE RELIEF VALVE
CHECK VALVE — STRAINER
GUARD PROTECTED DRAIN VALVE
NEW — EXISTING
HWS — HOT WATER SUPPLY
HWR — HOT WATER RETURN
NEW TO EXISTING POINT OF CONNECTION
S UNIT HEATER SENTINEL SWITCH MTD. 48" A.F.F. SINGLE POLE, 20 AMP, 120 V.
T THERMOSTAT — FLOW SWITCH

M-8

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DES. TMH | DR TMH | CHK JRB
PROJ. MGR. JRB CH ENGR. JRB
SUBMITTED BY: DATE
FIRM MEMBER PRINCIPAL
EFD FP RVD
HD DIR
APPROVED DATE
ACTIVITY - SATISFACTORY TO
APPROVED DATE
FOR EFD FOR COMMANDER NAVFAC

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. BENSON, JR.

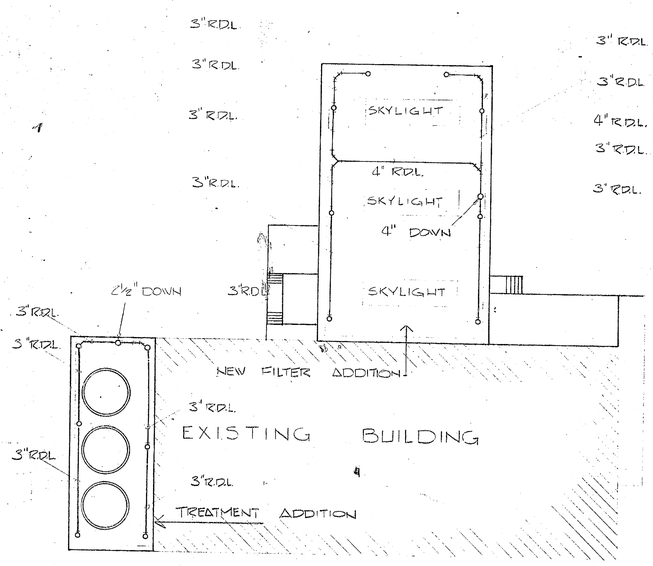
DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA
CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD
WATER TREATMENT PLANT
TREATMENT PLANT HEATING & VENTILATING PLA

| SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 4107573 |

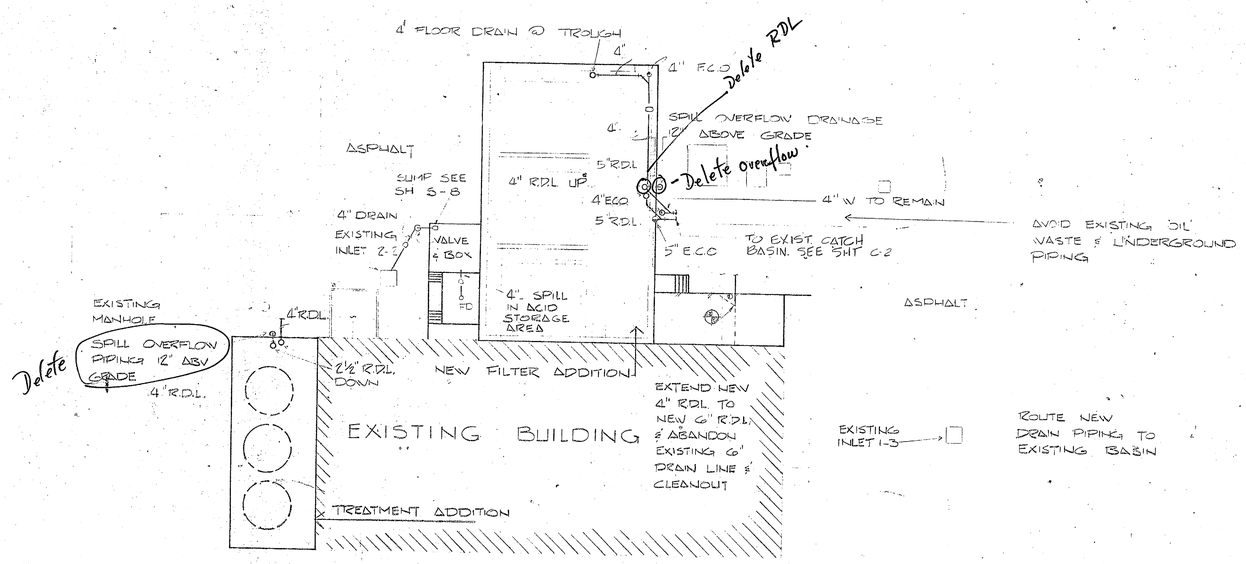
CONSTR. CONTR. NO. N62470-81-B-164
SCALE AS SHOWN | SPEC. 05-81-1644 | SHEET 40 OF 7
EFD DWG NO

AP 25494A

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |




## SECOND FLOOR PLAN
## BLDG. 670 (PIPING SHOWN AT CEILING)
SCALE 1/16" = 1'-0"




## FIRST FLOOR & PREMISES PLAN
## BLDG. 670
SCALE 1/16" = 1'-0"

## PLUMBING LEGEND

| | |
|---|---|
| —D— | NEW DRAIN LINE |
| ——— | NEW ROOF DRAIN LEADER |
| — — — | NEW OVERFLOW ROOF DRAIN LEADER |
| - - - - - | EXISTING LINE TO REMAIN |
| - - - - - | EXISTING LINE, ABANDON |
| ⊕ | POINT OF CONNECTION NEW TO EXISTING |
| ◉ | CLEANOUT |
| ○ | ROOF DRAIN |
| ● | OVERFLOW ROOF DRAIN |
| R.D.L. | ROOF DRAIN LEADER |
| F.C.O. | FLOOR CLEANOUT |
| E.C.O. | EXTERIOR CLEANOUT |

GRAPHIC SCALE
0 10' 20' 30' 40' 50' 60'
SCALE 1/16" = 1'-0"

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. BENSON, JR.

M-9

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING C
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, V
CAMP LEJEUNE — NORTH CAR

DES. TMH DR TMH CHK JRB
PROJ. MGR. JRB CH. ENGR. JRB
SUBMITTED BY — DATE 12/84
FIRM MEMBER — PRINCIPAL
EFD: FP DIR — RVD
HD — DIR
APPROVED — DATE
ACTIVITY - SATISFACTORY TO
APPROVED — DATE
FOR EFD FOR COMMANDER NAVFAC

EXPANSION OF HOLCOMB BOULEV
WATER TREATMENT PLANT
TREATMENT PLANT PLUMBING PLAN

SIZE F — CODE IDENT. NO. 80091 — NAVFAC DRAWING NO 4107574
CONSTR. CONTR. NO N62470-81-
SCALE (AS SHOWN) — SPEC. 05-81-1644 — SHEET 41
EFD DWG.

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |

## RAW WATER PUMP OPERATING SCHEDULE

| FIN. WATER RES. LEVEL ELEV. FT. | RISING WATER LEVEL READ-UP | FALLING WATER LEVEL READ-DOWN |
|---|---|---|
| 36.75 | HIGH WATER ALARM | |
| 36.5 | STOP PUMP #3 | STOP HIGH WATER ALARM |
| 36.0 | STOP PUMP #1, START #3 | START PUMP #3 |
| 35.5 | STOP PUMPS #3 & #4, START #1 | STOP PUMP #3, START PUMP #1 |
| 35.0 | STOP PUMP #2, START #3 | STOP PUMP #1, START PUMPS #3 & #4 |
| 34.5 | STOP LW ALARM | STOP PUMP #3, START PUMP #2 |
| 34.0 | | LOW WATER ALARM |
| 30.0 * | RESTORE BLDG. 671 PUMPS | |
| 29.0 * | | BLDG. 671, BACKWASH & SERVICE PUMP SHUTDOWN |
| 27.0 ** | RESTORE TR. MAIN & BW PUMPS | |
| 26.0 ** | | TRANS MAIN & BACKWASH PUMP SHUTDOWN |

NOTE: PUMPS 3 & 4 TO BE MANUALLY ALTERNATED
PUMPS 1 & 2 TO BE MANUALLY ALTERNATED
PUMPS 3 & 4 TO BE AUTOMATICALLY ALTERNATED
* OPERATOR COMMANDED SELECTION OF PARADISE PT., BERKLEY MANOR, OR MIDWAY PARK ELEVATED TANK.

* HOLCOMB BLVD. RESERVOIR ONLY
** TRANS. MAIN RESERVOIR ONLY

## HOLCOMB BLVD PUMP OPERATING SCHEDULE - BLDG. 671

| * SELECTED ELEV. TANK LEVEL ELEVATION - FT. | RISING WATER LEVEL READ-UP | FALLING WATER LEVEL READ-DOWN |
|---|---|---|
| 161.5 | HIGH WATER ALARM | |
| 161.0 | STOP PUMP # 1 OR # 2 | STOP HIGH WATER LEVEL ALARM |
| 159.0 | STOP PUMP #3, (4), START # 1 OR # 2 | START PUMP # 1 OR #2 |
| 157.5 | STOP PUMP # 4 (3) | STOP PUMP # 1 OR 2, START PUMP # 3 (4) |
| 156.0 | STOP PUMP #5, START #3 & # 4 | START PUMP # 4 (3) |
| 154.0 | | STOP PUMP #3 & #4, START PUMP #5 |
| 152.0 | STOP LOW WATER ALARM | |
| 151.0 | | LOW WATER ALARM |

NOTE: PUMPS 1, 2, 3, & 4 ARE EXISTING
PUMPS 1 & 2 TO BE AUTOMATICALLY ALTERNATED

## WELL FIELD OPERATING SCHEDULE - BLDG. 670

| RAW WATER RES. LEVEL ELEV. - FT. | RISING WATER LEVEL READ-UP | FALLING WATER LEVEL READ-DOWN |
|---|---|---|
| 42.0 | HIGH WATER ALARM | |
| 41.5 | STOP STEP 1 | STOP HIGH WATER ALARM |
| 41.0 | STOP STEP 2 | START STEP 1 |
| 40.5 | STOP STEP 3 | START STEP 2 |
| 40.0 | STOP STEP 4 | START STEP 3 |
| 39.5 | | START STEP 4 |
| 36.5 | STOP LOW WATER ALARM | |
| 36.0 | | LOW WATER ALARM |
| 28.0 | RESTART RW PUMPS | |
| | | RAW WATER PUMP SHUTDOWN |

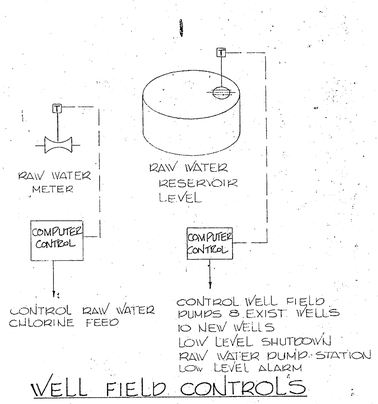
## TRANSMISSION MAIN OPERATING SCHEDULE

| TARAWA TERRACE RESERVOIR LEVEL ELEV. - FT. | RISING WATER LEVEL READ-UP | FALLING WATER LEVEL READ-DOWN |
|---|---|---|
| 21.5 | HIGH WATER ALARM | |
| 21.0 | STOP PUMP # 1 OR #2 | STOP HIGH WATER ALARM |
| 20.5 | STOP PUMP #3, START # 1 OR #2 | START PUMP # 1 OR #2 |
| 20.0 | | STOP PUMP # 1 OR 2, START # 3 |
| | STOP LOW WATER ALARM | |
| 18.0 | | LOW WATER ALARM |
| 15.0 | RESTART BLDG TT-39A PUMP | |
| 14.0 | | BLDG. TT-39A PUMP SHUTDOWN |

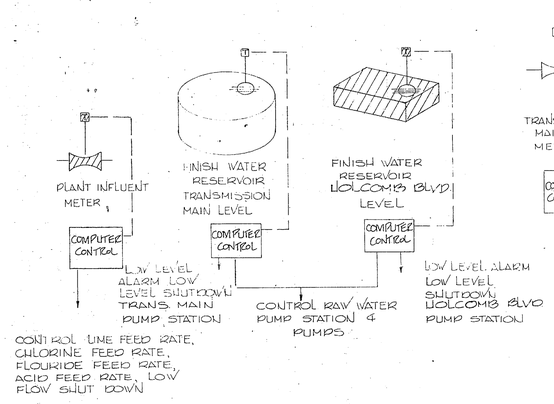
NOTE: PUMPS # 1 & # 2 TO BE AUTOMATICALLY ALTERNATED

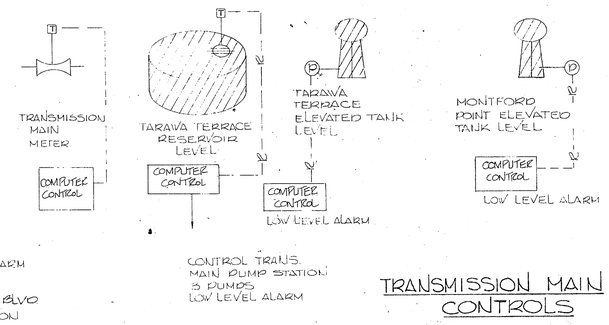
## VENTURI METER SCHEDULE

| METER | MAIN SIZE | THROAT SIZE | MAXIMUM FLOW | MINIMUM FLOW | MAXIMUM DIFFERENTIAL |
|---|---|---|---|---|---|
| RAW WATER | 16" | 9.6" | 7.2 MGD | 1.0 MGD | 100 INCHES |
| TRANS. MAIN | 12" | 7.2" | 4.0 MGD | 2.0 MGD | 100 INCHES |




WELL FIELD CONTROLS

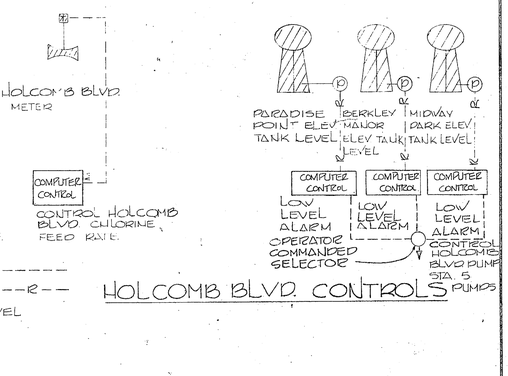



TRANSMISSION MAIN CONTROLS

SYSTEM CONTROLS/INSTRUMENTATION

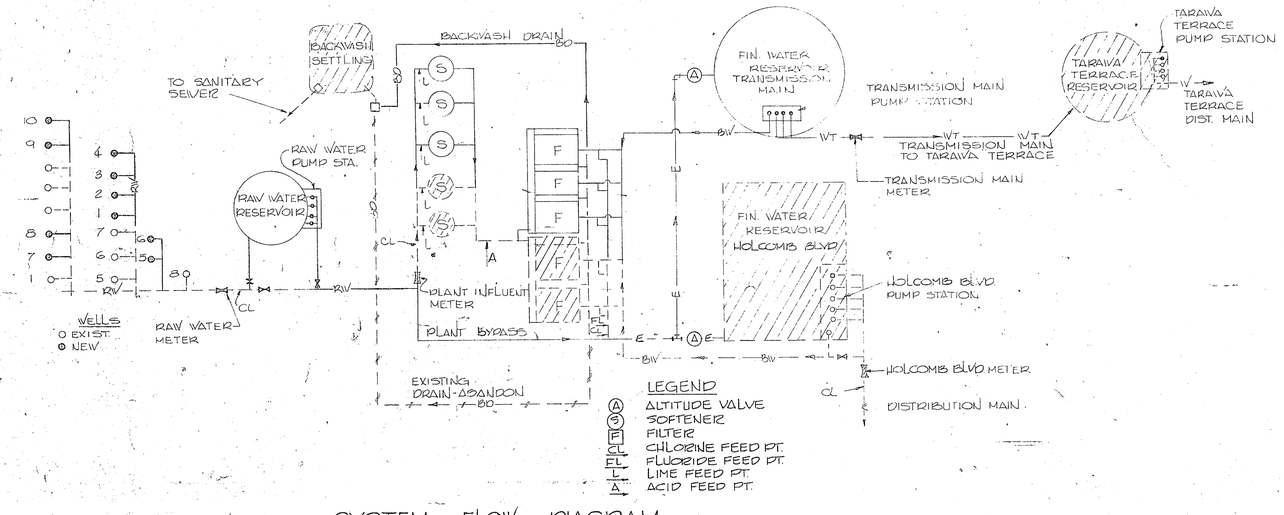
NOTE: ALL INDICATOR-RECORDER DEVICES LOCATED IN THE MAIN CONTROL PANEL IN THE TREATMENT PLANT OFFICE.



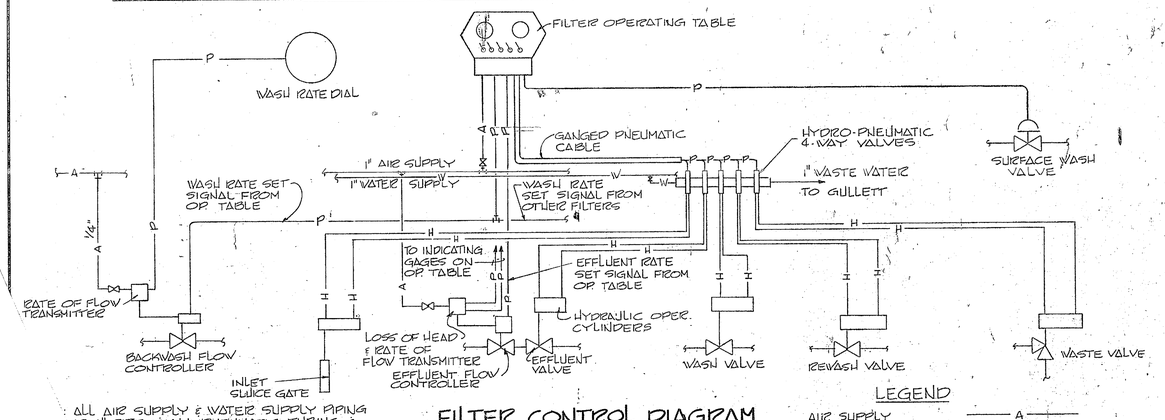

HOLCOMB BLVD. CONTROLS

LEGEND

- NEW DEVICE/STRUCTURE
- EXIST. DEVICE/STRUCTURE
- LOCAL (HARDWIRE) SIGNAL PATH -----
- REMOTE (RADIO) SIGNAL PATH --R--
- (P) PRESSURE OPERATED LEVEL TRANSMITTER
- (T) TRANSMITTER




SYSTEM FLOW DIAGRAM
NO SCALE




ALL AIR SUPPLY & WATER SUPPLY PIPING IS 1" SIZE & ALL PNEUMATIC TUBING & HYDRAULIC TUBING IS 1/4" SIZE, UNLESS INDICATED OTHERWISE

FILTER CONTROL DIAGRAM
NO SCALE

LEGEND

- AIR SUPPLY —A—
- WATER SUPPLY —W—
- PNEUMATIC TUBING —P—
- HYDRAULIC TUBING —H—

M-10

HENRY VON OESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.

DES. JRB | DR. PYT | CHK. JRB
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY — DATE — FIRM MEMBER — PRINCIPAL
EFD — RVD
HD. — DIR.
APPROVED — DATE — OFFICER IN CHARGE
APPROVED — DATE

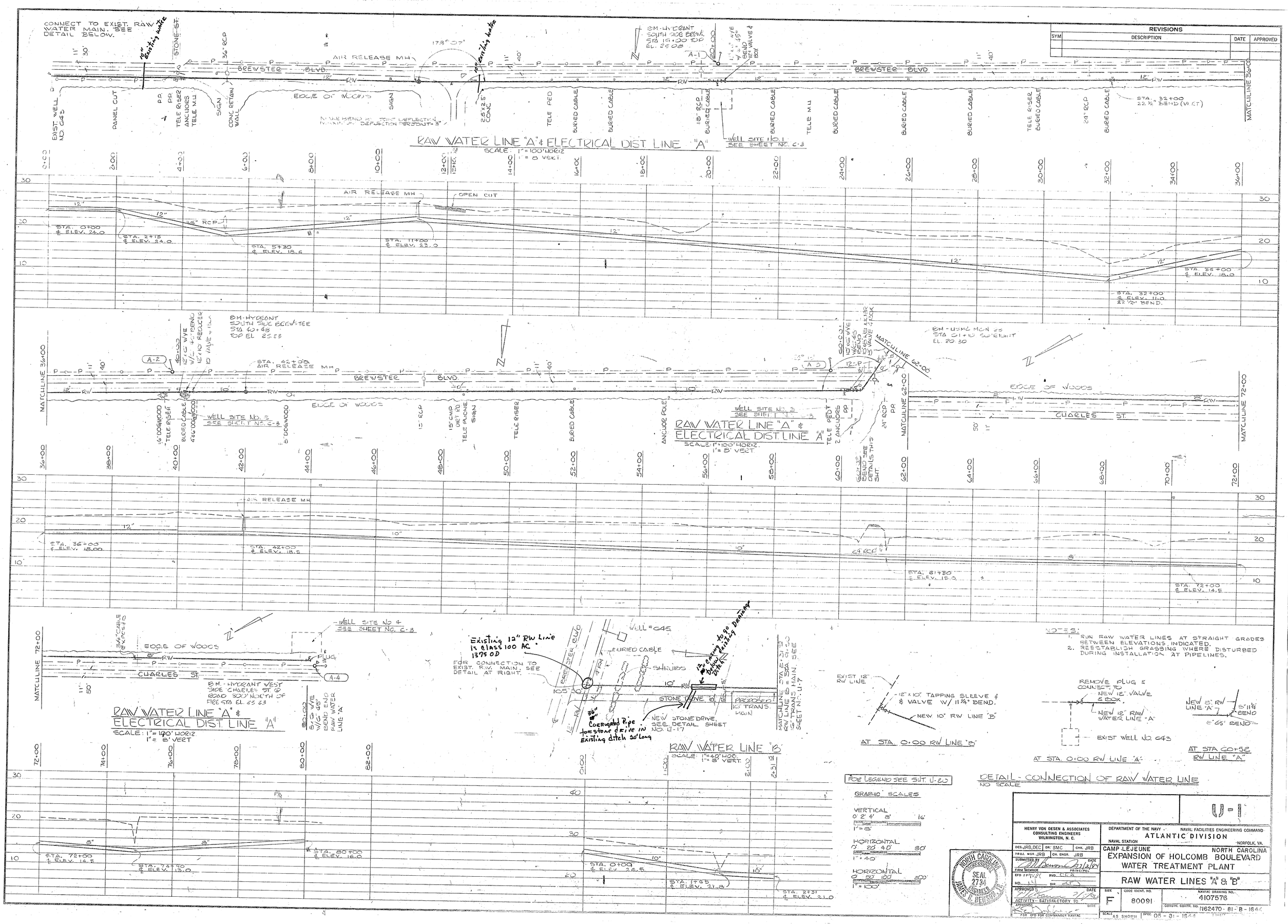
CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

CONTROL & FLOW DIAGRAMS

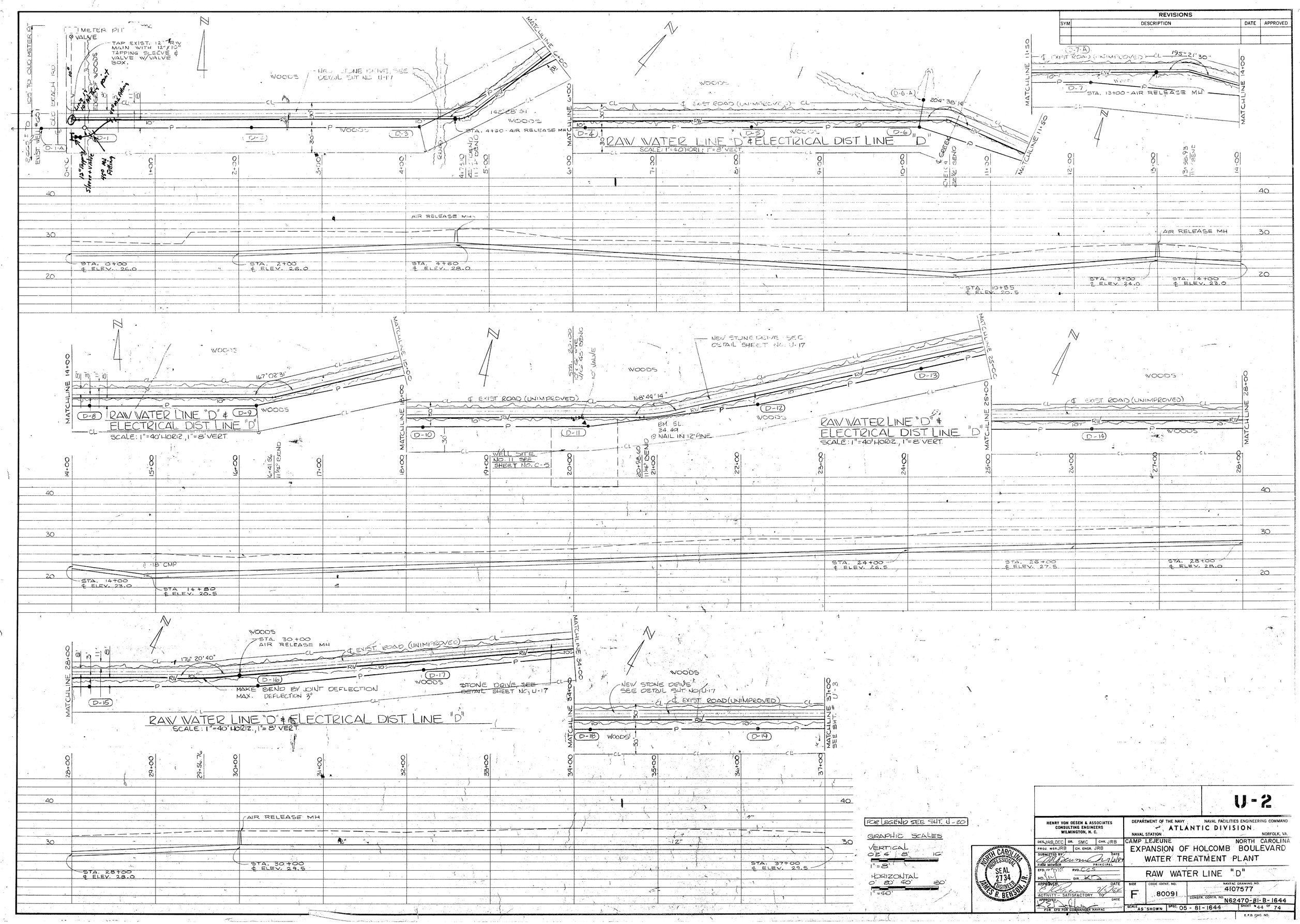
SIZE: F | CODE IDENT. NO.: 80091 | NAVFAC DRAWING NO.: 4107575
CONSTR. CONTR. NO. N62470-81-B-1644

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 2734 JAMES R. BENSON, JR.

| REVISIONS | | | |
|---|---|---|---|
| SYM. | DESCRIPTION | DATE | APPROVED |
| | | | |



| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |




FOR LEGEND SEE SHT. U-20

GRAPHIC SCALES

VERTICAL 0' 2' 4' 8' 16' 1"=8'

HORIZONTAL 0' 20' 40' 80' 1"=40'

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. BENSON, JR.

U-2

HENRY VON OESEN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND — ATLANTIC DIVISION — NAVAL STATION NORFOLK, VA.

DES. JRB, DEC | DR. SMC | CHK. JRB
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY: FIRM MEMBER / PRINCIPAL — DATE
EFD. INSPTR. — RVD. CCS
HD. — DR. KD
APPROVED — DATE 7/6/82
ACTIVITY - SATISFACTORY TO — DATE
APPROVED — FOR EFD FOR COMMANDER NAVFAC

CAMP LEJEUNE — NORTH CAROLINA

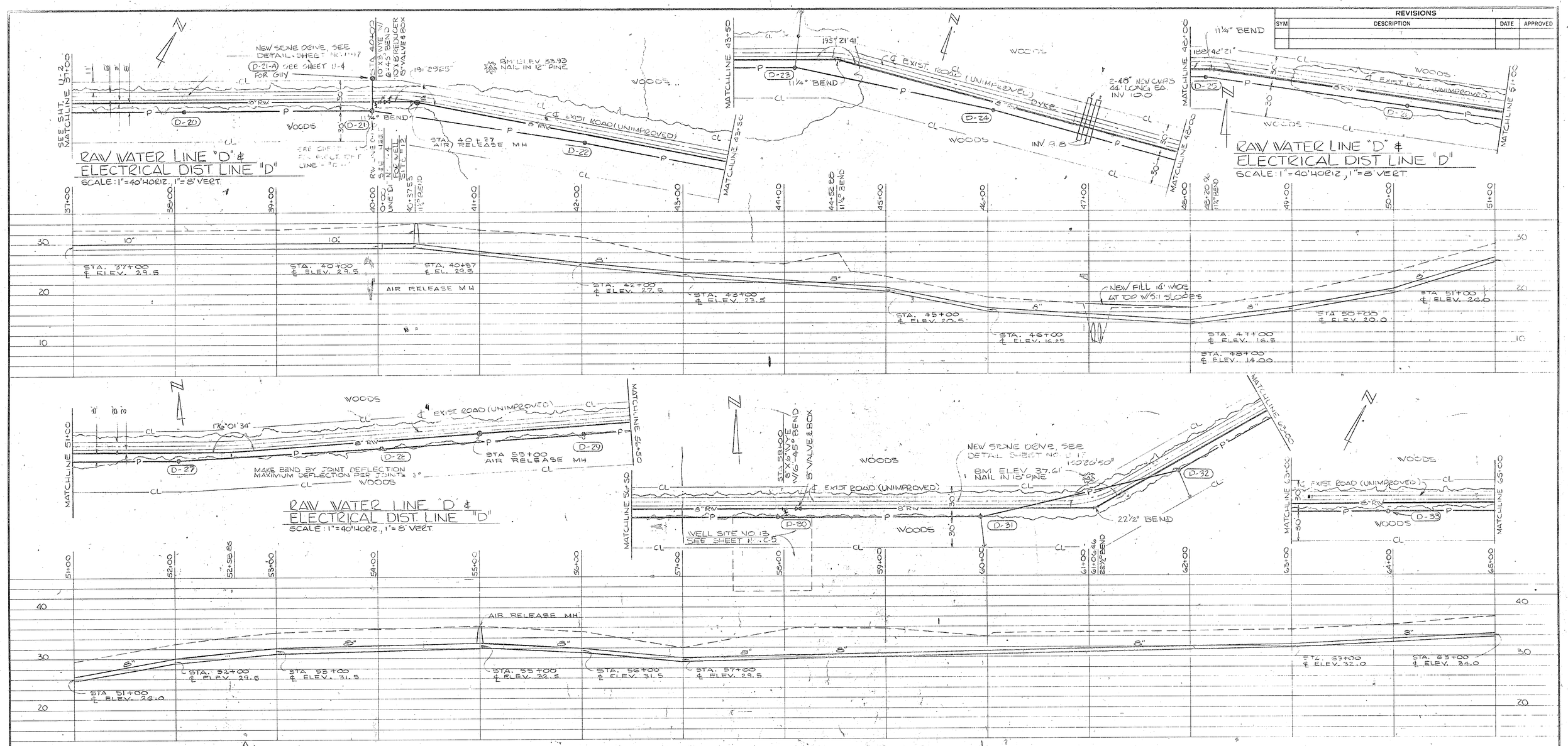
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

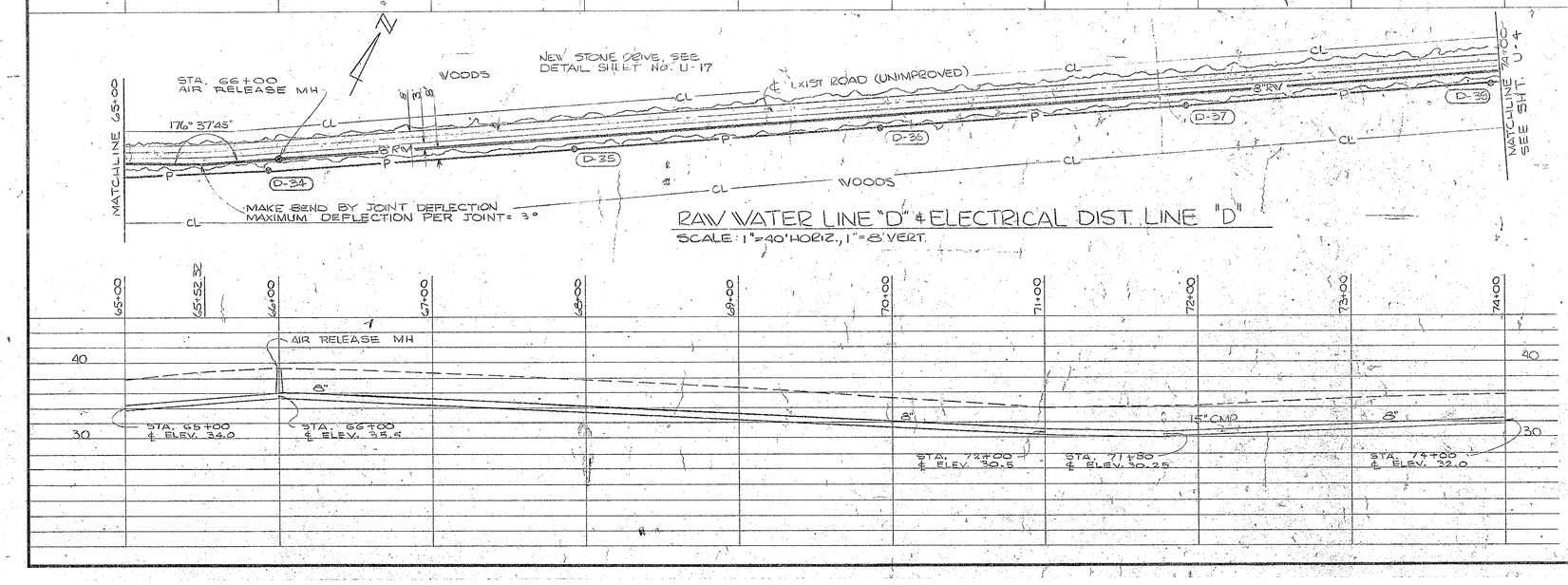
RAW WATER LINE "D"

| SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 4107577 |
| | | CONSTR. CONTR. NO. N62470-81-B-1644 |
| SCALE AS SHOWN | SPEC. 05-81-1644 | SHEET 44 OF 74 |

E.F.D. DWG. NO.

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |




FOR LEGEND SEE SHT U-20

GRAPHIC SCALES

VERTICAL
0 2 4 8 16
1"=8'

HORIZONTAL
0 20 40 80
1"=40'

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. BENSON, JR.

U-3

HENRY VON DESEM & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.

DES. JRB, DEC | DR. SMC | CHK. JRB
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY — DATE — FIRM MEMBER — PRINCIPAL
ENG. — REVD. CCS
HD. — DIR.
APPROVED — DATE
ACTIVITY – SATISFACTORY TO — DATE
APPROVED — FOR: CO FOR COMMANDER NAVFAC

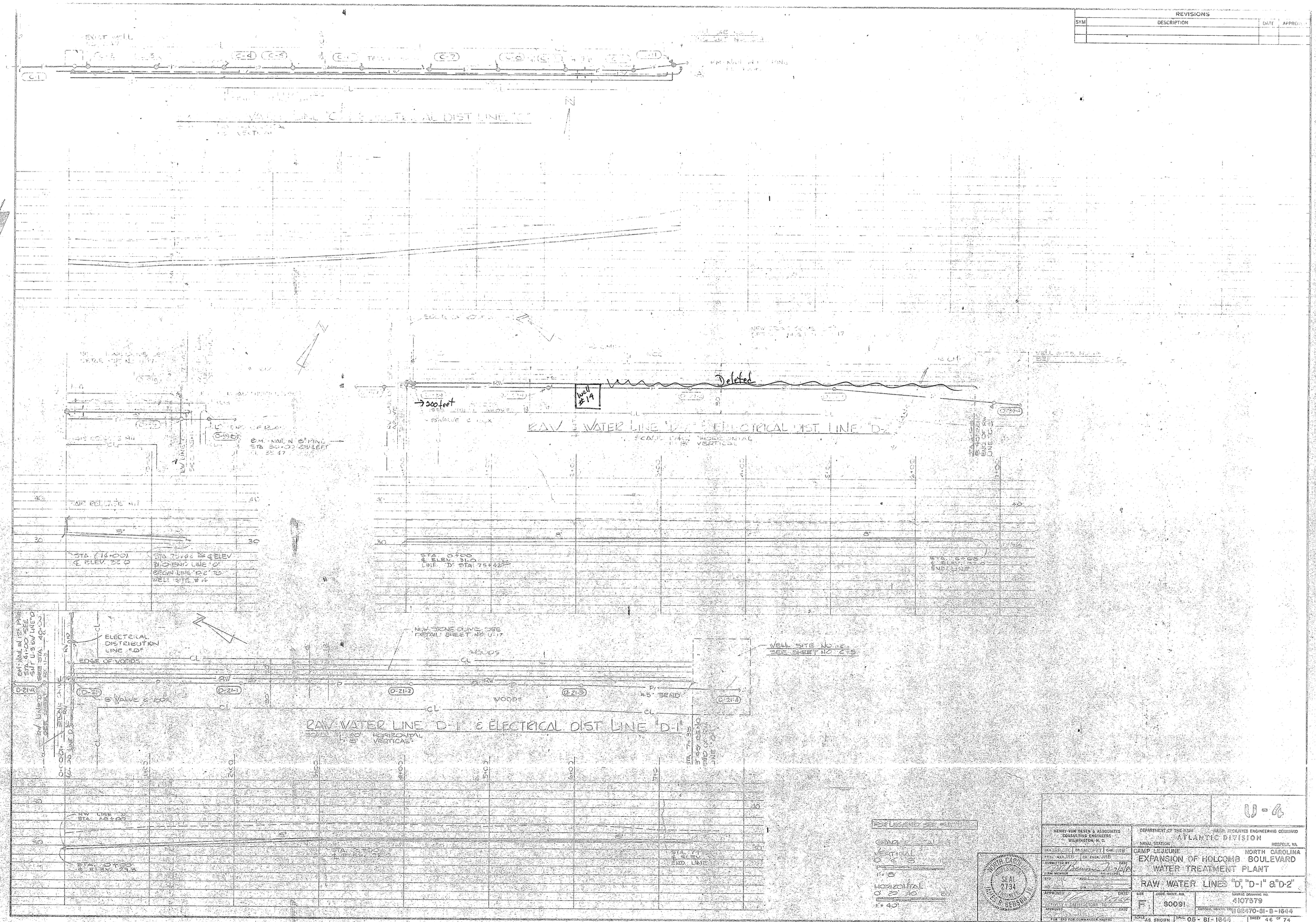
CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD
WATER TREATMENT PLANT

RAW WATER LINE "D"

SIZE: F | CODE IDENT. NO.: 80091 | NAVFAC DRAWING NO.: 4107578
CONSTR. CONTR. NO.: N62470-81-B-1644
SCALE: AS SHOWN | SPEC. 05-81-1644 | SHEET 45 OF 74

E.F.D. DWG. (IN)

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROV |
| | | | |



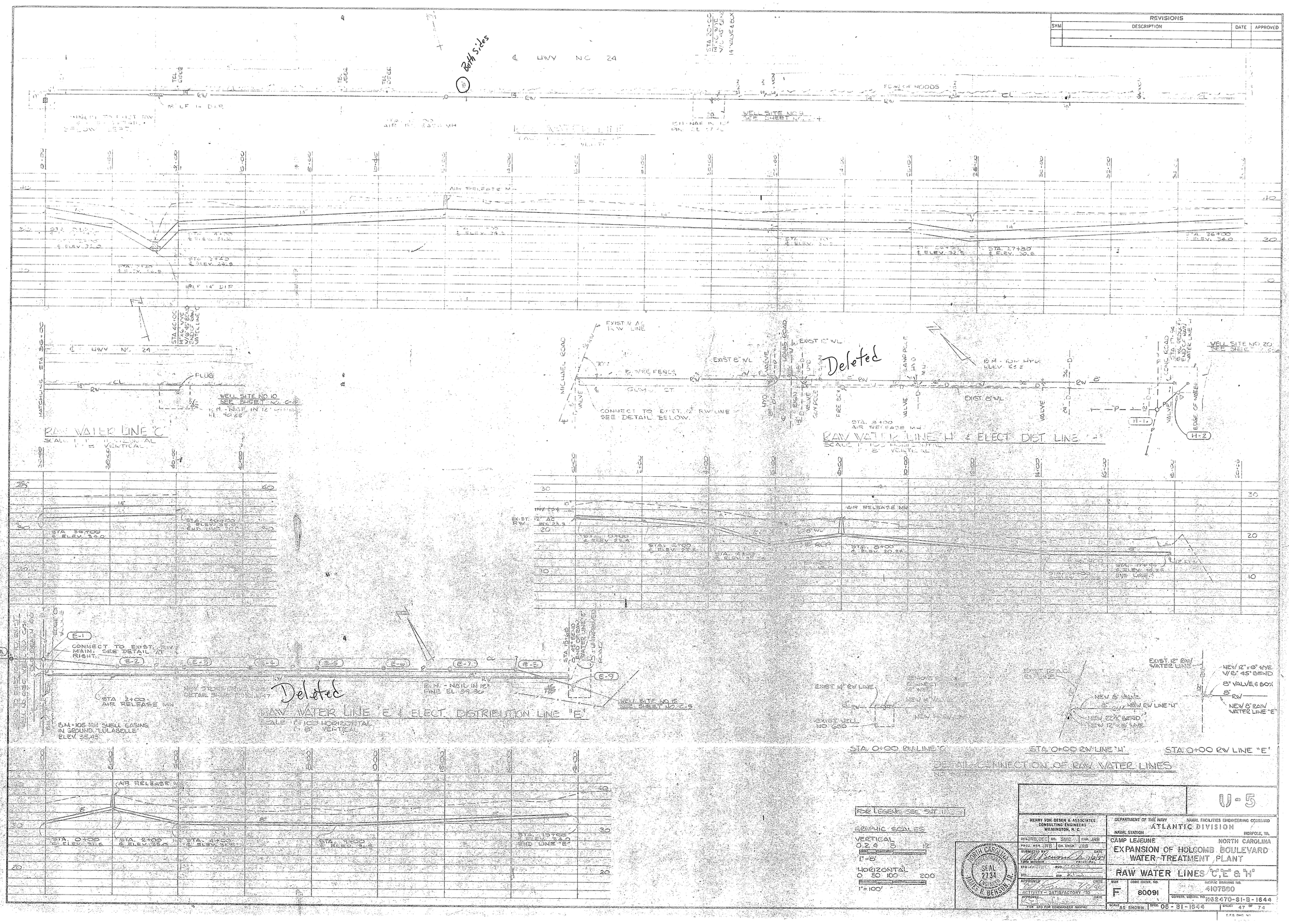

U-6

| | |
|---|---|
| HENRY VON OESEN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C. | DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NAVAL STATION NORFOLK, VA. |
| DR. SMCPTT CHK. JRB PROJ. MGR. JRB CH. ENGR. JRB | CAMP LEJEUNE NORTH CAROLINA EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT |
| SUBMITTED BY DATE FIRM MEMBER PRINCIPAL | RAW WATER LINES "D", "D-1" & "D-2" |
| EFD AVG. HD DIR. | |
| APPROVED DATE ACTIVITY - SATISFACTORY TO | SIZE F CODE IDENT. NO. 80091 NAVFAC DRAWING NO. 4107579 |
| APPROVED DATE FOR EFD FOR COMMANDER NAVFAC | CONTR. CONTL. NO. 102470-81-B-1644 |
| SCALE AS SHOWN DATE 05-81-1644 | SHEET 46 OF 74 |

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 2734 JAMES R. BERSOLA, JR.

E.F.D. DWG. NO. 2075

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |




U-5

HENRY VON DESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N.C.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.

CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

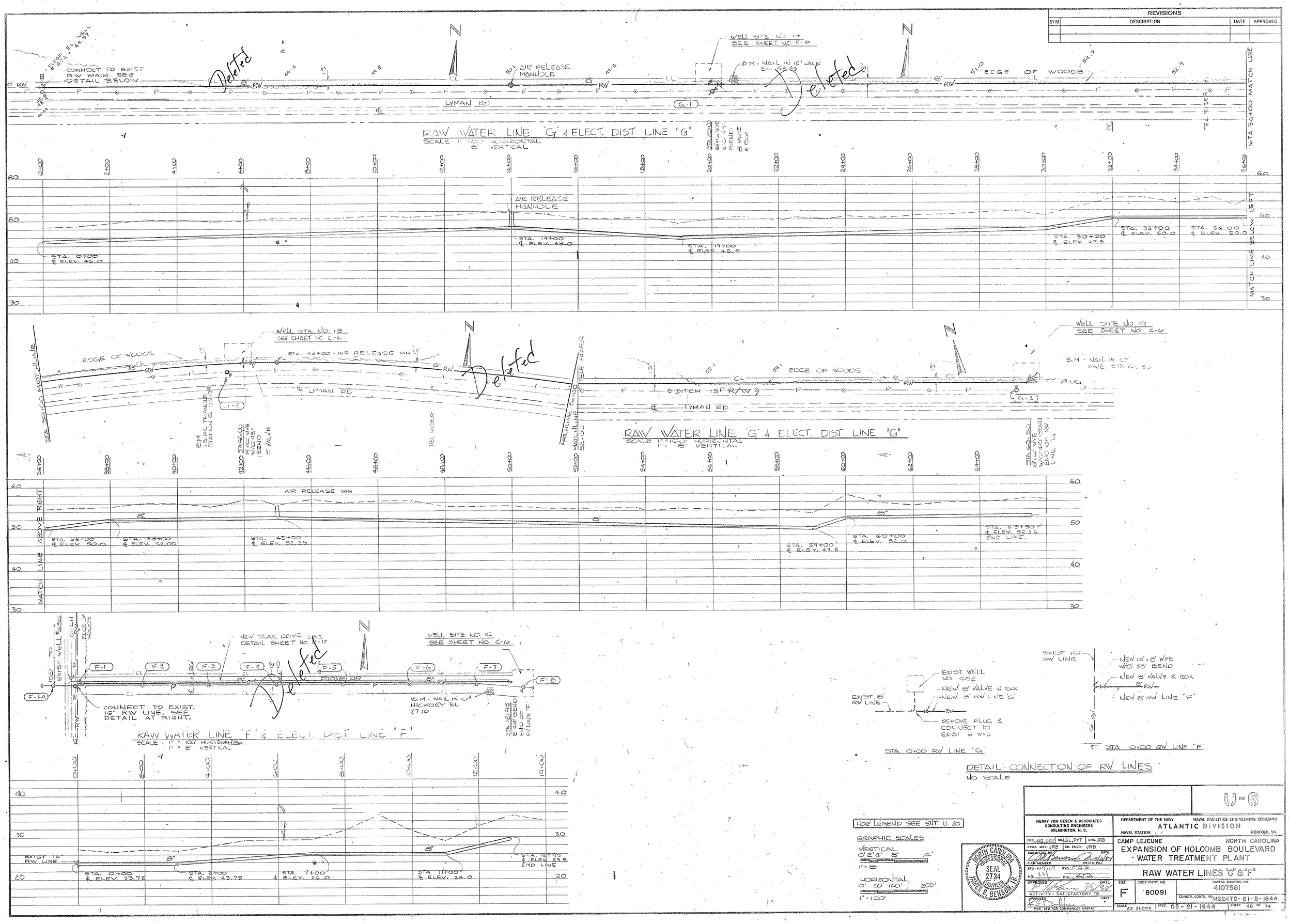
RAW WATER LINES "C", "E" & "H"

DES. JRB, DEC — DR. SMC — CHK. JRB
PROJ. MGR. JRB — CH. ENGR. JRB
SUBMITTED BY — DATE
FIRM MEMBER — PRINCIPAL
ENG — RVD.
HD. — DIR.
APPROVED — DATE
ACTIVITY - SATISFACTORY TO
APPROVED — DATE
FOR CO FOR COMMANDER NAVFAC

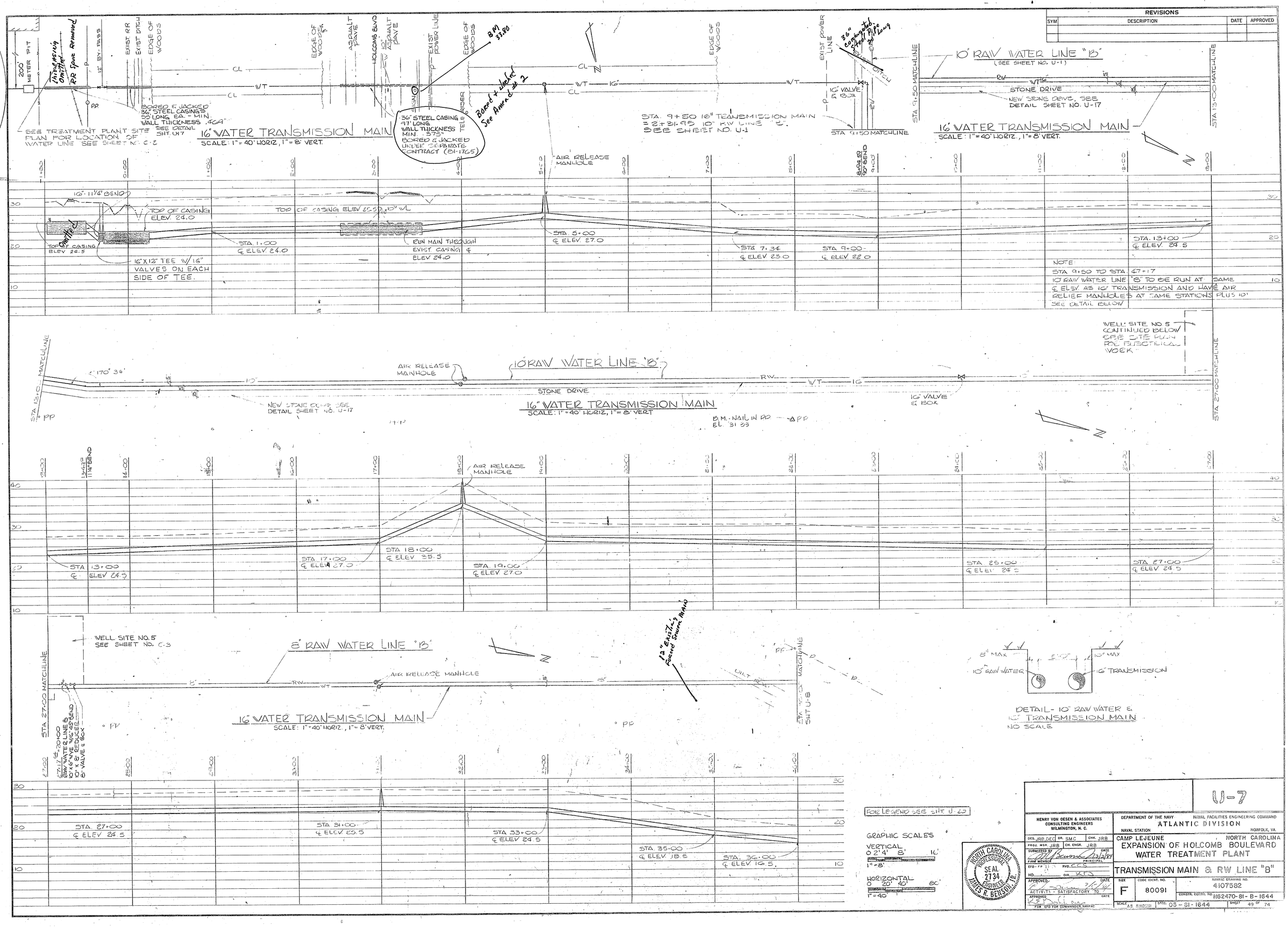
SIZE: F — CODE IDENT. NO.: 80091 — NAVFAC DRAWING NO.: 4107560
CONSTR. CONTRL. NO.: N62470-81-B-1644
SCALE: AS SHOWN — SPEC: 05-81-1644 — SHEET 47 OF 74

E.F.D. DWG. 47

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |



| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |




FOR LEGEND SEE SHT. U-20

GRAPHIC SCALES
VERTICAL 0 2' 4' 8' 16' 1" = 8'
HORIZONTAL 0 20' 40' 80' 1" = 40'

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. BENSON, JR.

U-7

HENRY VON OESEN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.

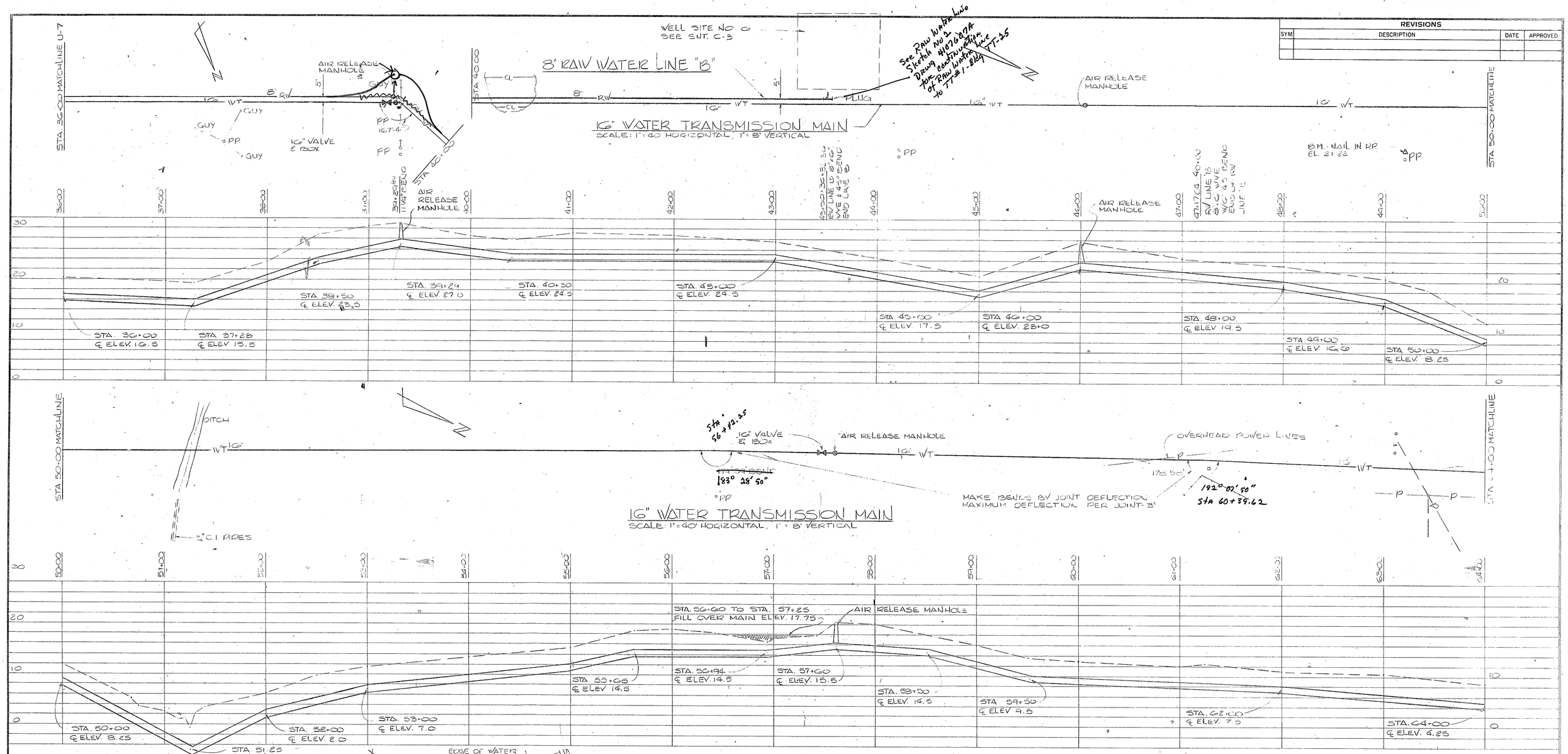
DES. JRB, DEC | DR. SMC | CHK. JRB
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY — FIRM MEMBER — PRINCIPAL — DATE 7/2/84
EFD-FP | RVD. CCS
HD. | DIR. KLD
APPROVED — DATE 7/2/84
ACTIV.(T) - SATISFACTORY TO
APPROVED — DATE
FOR EFD FOR COMMANDER, NAVFAC

CAMP LEJEUNE, NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

TRANSMISSION MAIN & RW LINE "B"

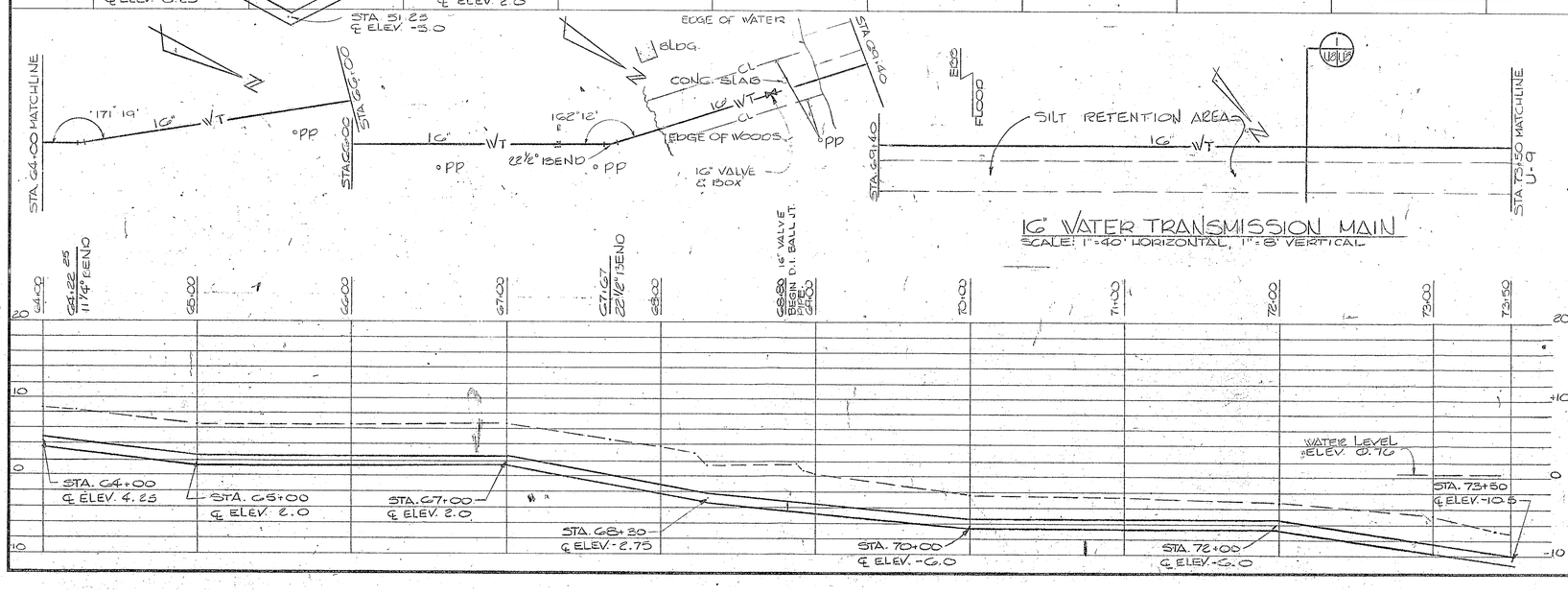
SIZE: F | CODE IDENT. NO.: 80091 | NAVFAC DRAWING NO.: 4107582
CONSTR. CONTRL. NO.: N62470-81-B-1644
SCALE: AS SHOWN | SPEC. 05-81-1644 | SHEET 49 OF 74

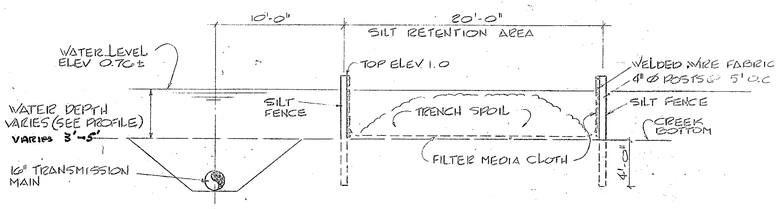
| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |










SECTION - SUBAQUEOUS PIPE INSTALLATION
NOT TO SCALE

FOR LEGEND SEE SHT. U-20

GRAPHIC SCALES
VERTICAL 0 4' 8' 16' 1" = 8'
HORIZONTAL 0 20 40 80 1" = 40'

U-19

HENRY VON OESEN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.

DES. JRB, DEC DR. PYT CHK. JRB
PROJ. MGR. JRB CH. ENGR. JRB
SUBMITTED BY — DATE — PRINCIPAL
EFD - FPO RVD. CCS
HD. DIR. KTJ
APPROVED — DATE — FIRM MEMBER
ACTIVITY - SATISFACTORY TO — APPROVED — DATE — FOR O/D FOR COMMANDER, NAVFAC

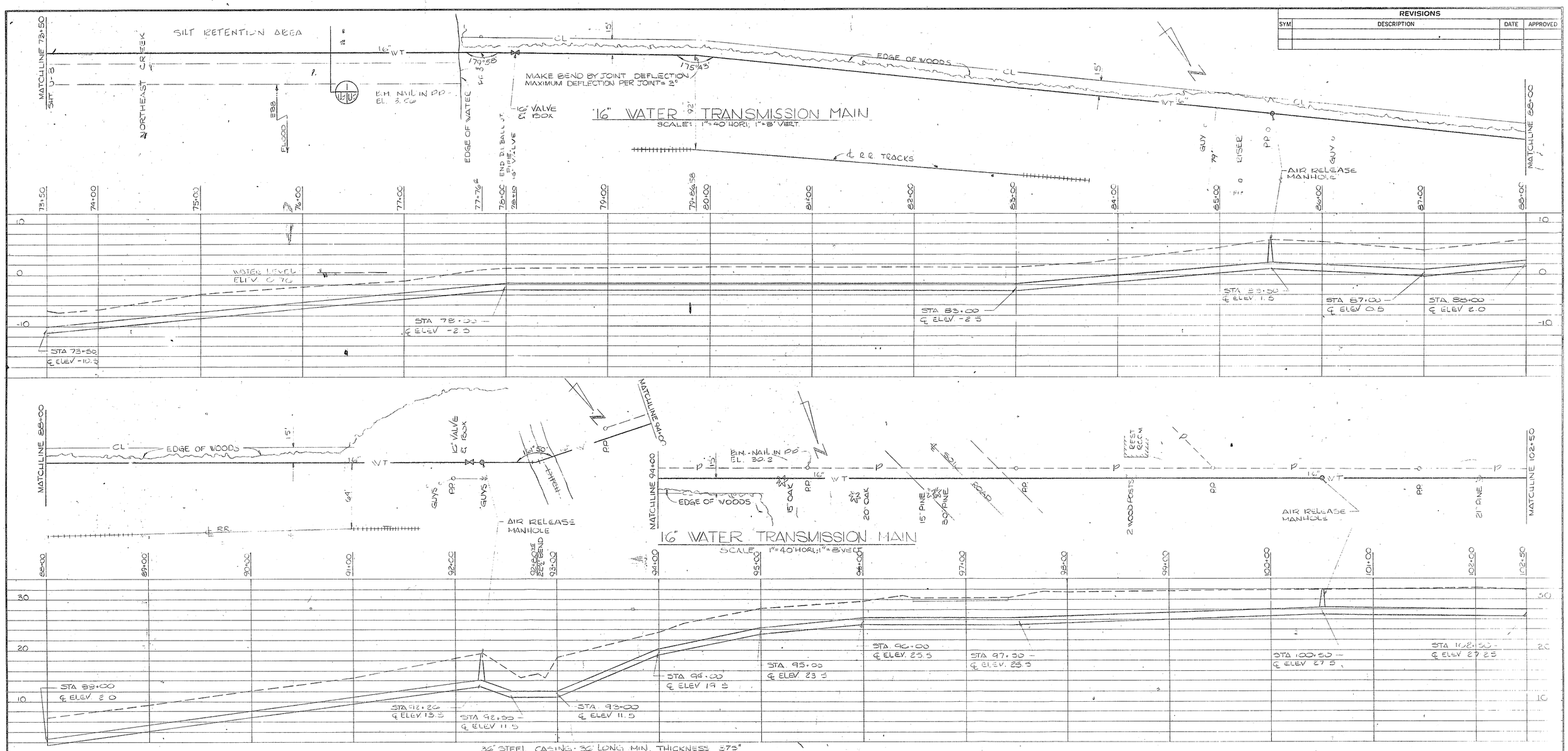
CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
TRANSMISSION MAIN & RW LINE "B"

| SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 4107583 |

CONSTR. CONTR. NO. N62470-81-B-1644
SCALE AS SHOWN — DWG. 81-1644 — SHEET 50 OF 74

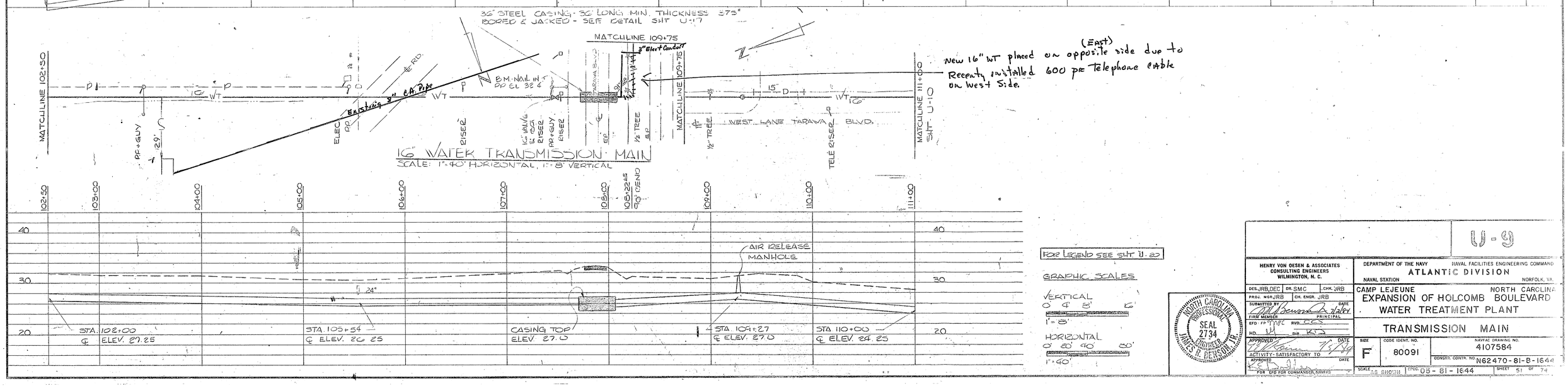
NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES B. BENSON, JR.

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |










FOR LEGEND SEE SHT U-20

GRAPHIC SCALES

VERTICAL
0' 4' 8' 16'
1" = 8'

HORIZONTAL
0' 20' 40' 80'
1" = 40'

U-9

HENRY VON OESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION — ATLANTIC DIVISION — NORFOLK, VA.

DES. JRB, DEC | DR. SMC | CHK. JRB
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY — FIRM MEMBER — PRINCIPAL — DATE
EFD - FPO/NC — RVD. CCS
HD. — DIR.
APPROVED — DATE
ACTIVITY - SATISFACTORY TO
APPROVED — DATE
FOR EFD FOR COMMANDER, NAVFAC

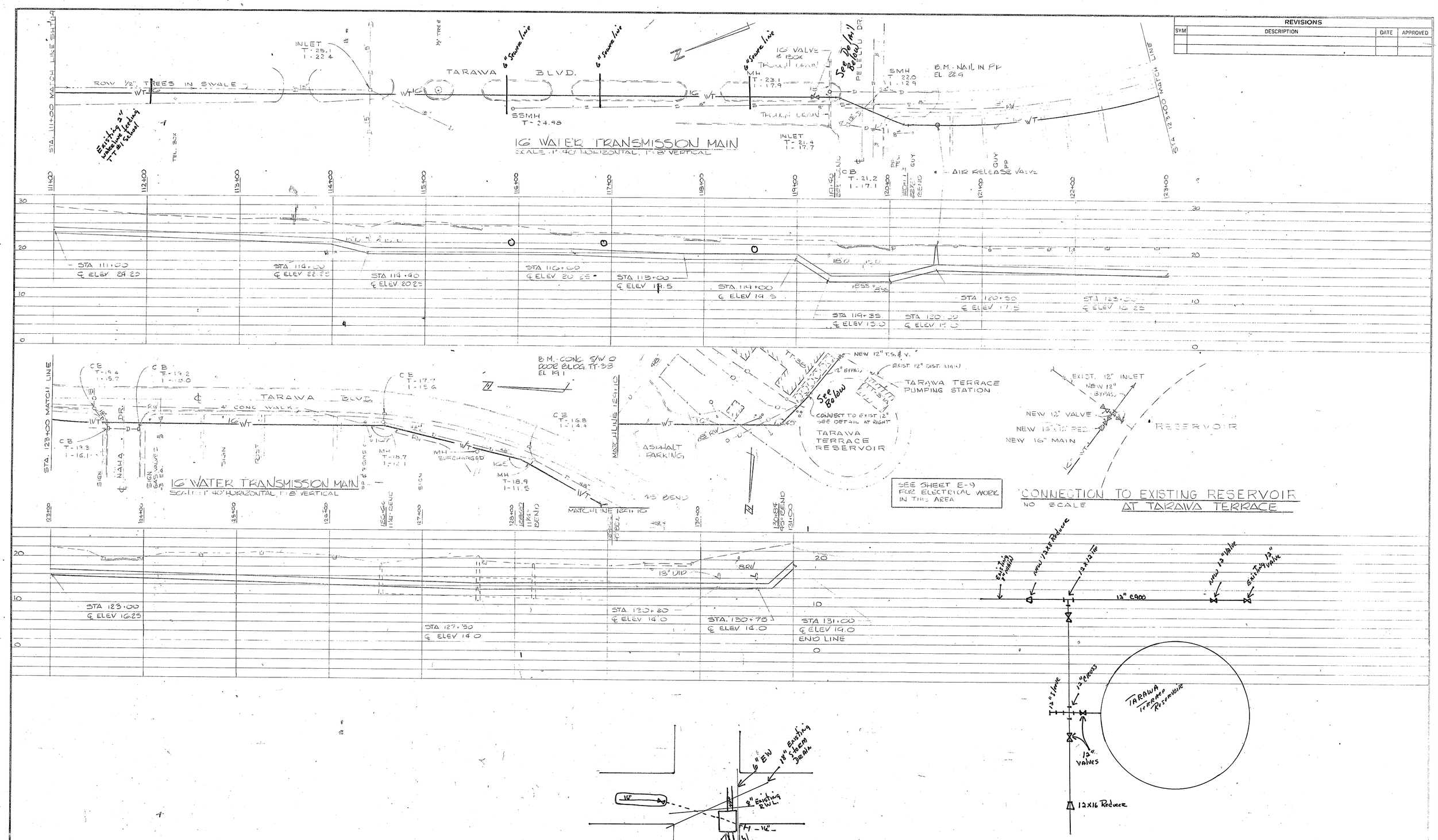
CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD
WATER TREATMENT PLANT

TRANSMISSION MAIN

| SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 4107584 |

CONSTR. CONTR. NO. N62470-81-B-1644
SCALE: AS SHOWN — CPO: 05-81-1644 — SHEET 51 OF 74

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |




FOR LEGEND SEE SHT. U-20

GRAPHIC SCALES

VERTICAL
0' 4' 8' 16'
1" = 8'

HORIZONTAL
0' 20' 40' 80'
1" = 40'

U-10

HENRY VON OESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.

DES. JRB DEC | DR. LGL | CHK. JRB
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY — DATE
FIRM MEMBER — PRINCIPAL
EFD-1 — REVD.
HD. — DIR.
APPROVED — DATE 7/5/94
ACTIVITY - SATISFACTORY TO — DATE
APPROVED — DATE
FOR EFD FOR COMMANDER NAVFAC

CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

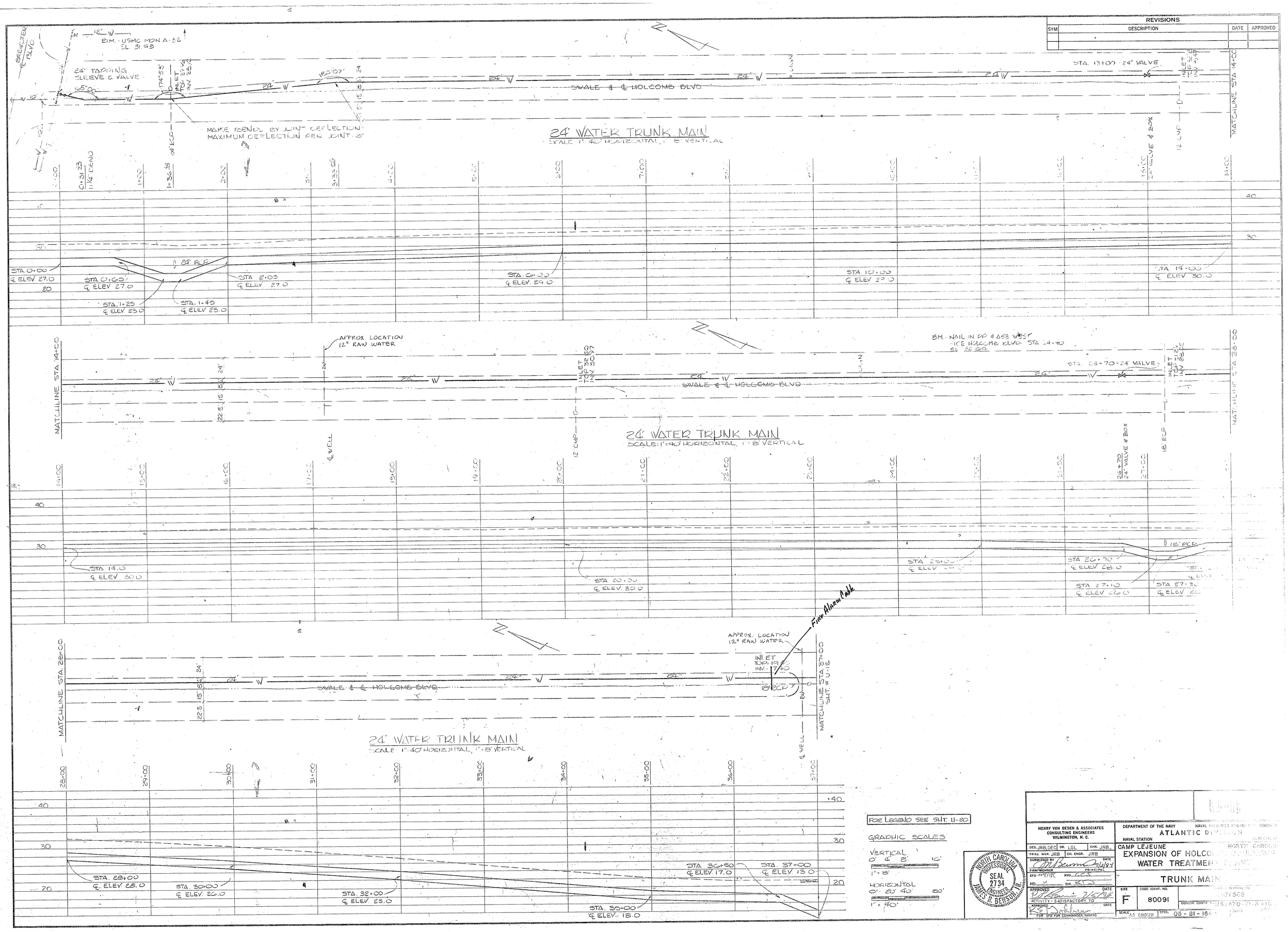
TRANSMISSION MAIN

| SIZE | CODE-IDENT. NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 4107585 |

CONTR. CONTR. NO. N62470-81-B-1644
SCALE AS SHOWN | SPEC. 08-81-1644 | SHEET 52 OF 74

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. BENSON, JR.

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |




FOR LEGEND SEE SHT. U-20

GRAPHIC SCALES

VERTICAL 0' 4' 8' 16' 1" = 5'

HORIZONTAL 0' 20' 40' 80' 1" = 40'

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES H. BENSON, JR.

HENRY VON OESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.

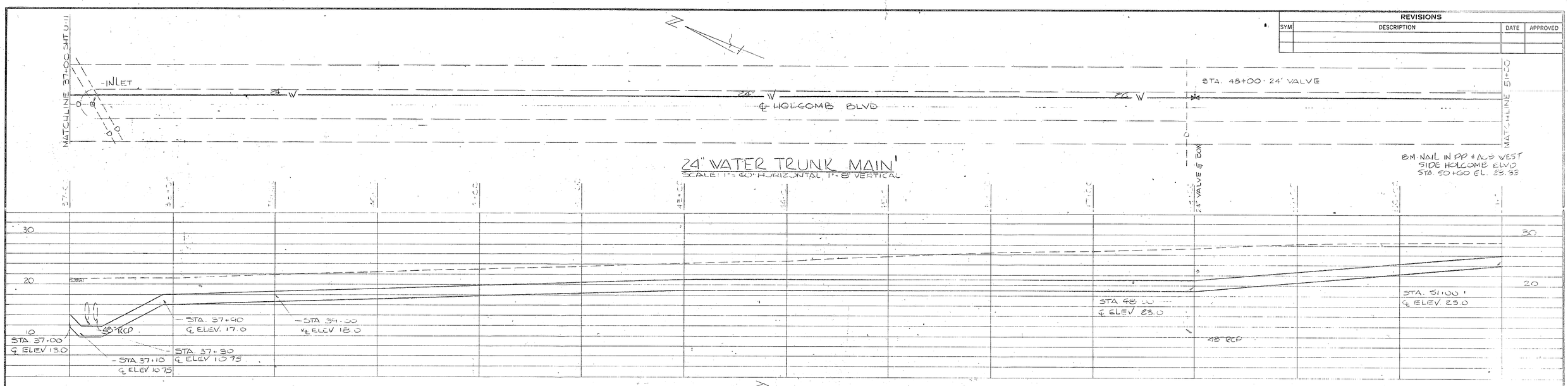
DES. JRB, DEC DR. LGL CHK. JRB
PROJ. MGR. JRB CH. ENGR. JRB
SUBMITTED BY DATE 7/12/84
FIRM/MEMBER PRINCIPAL
EFD. FP-11/19/C REV. CCS
HD. DIR. KT-0
APPROVED DATE 7/12/84
ACTIVITY - SATISFACTORY TO
APPROVED DATE
FOR OIC FOR COMMANDER, NAVFAC

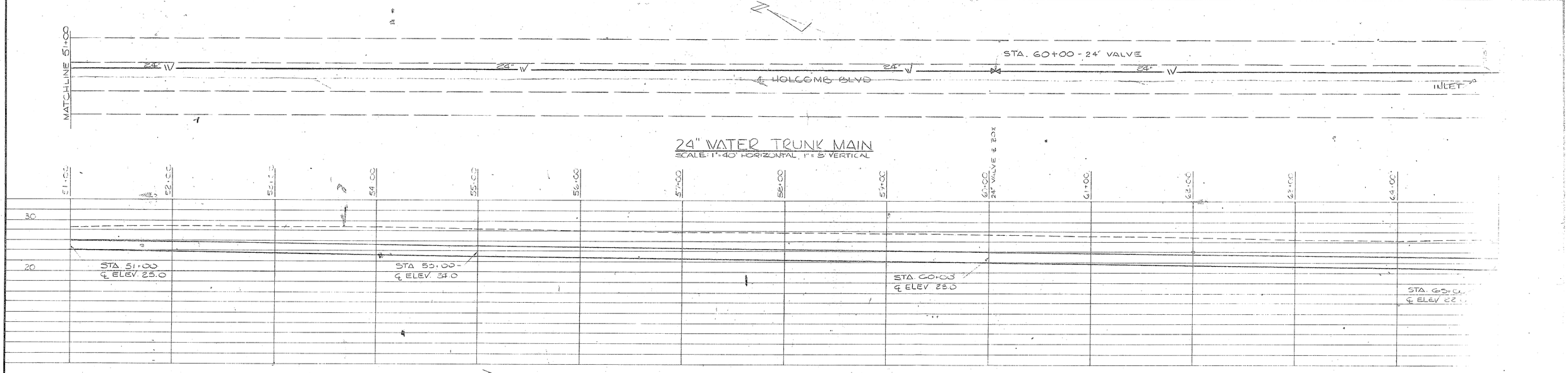
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NORFOLK, VA.
NAVAL STATION
CAMP LEJEUNE NORTH CAROLINA
EXPANSION OF HOLCOMB BLVD. WATER TREATMENT PLANT
TRUNK MAIN

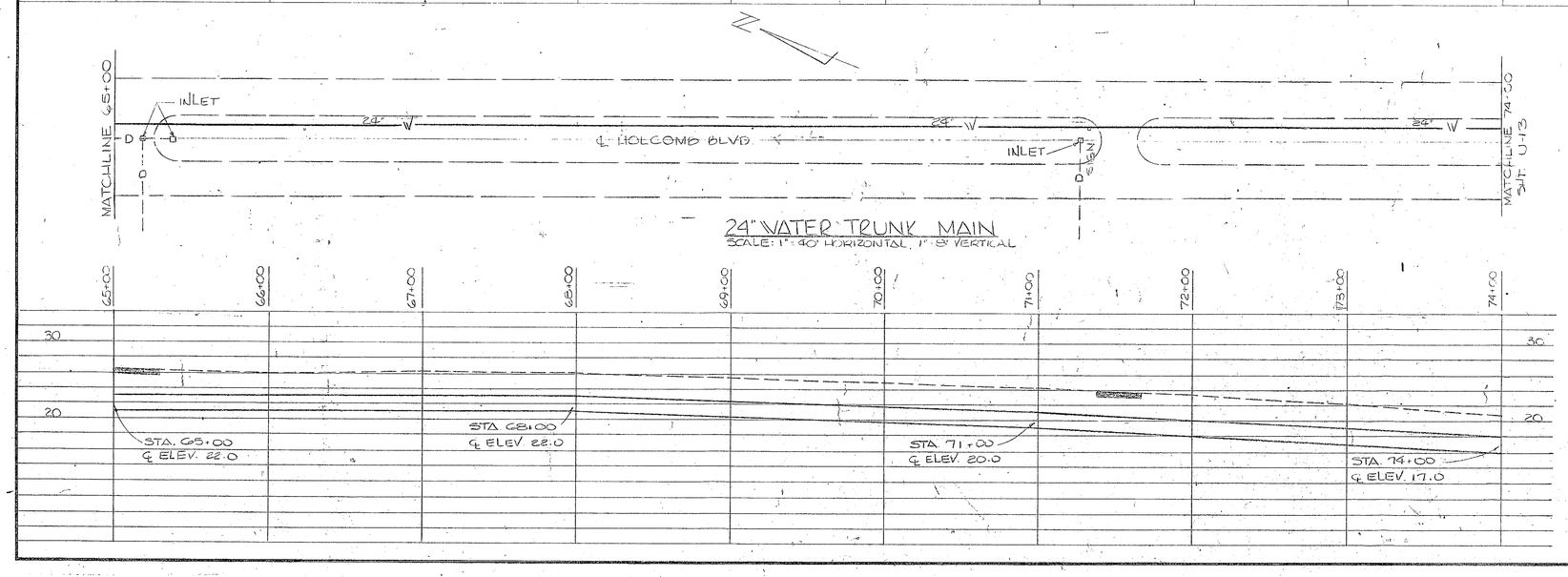
SIZE F | CODE IDENT. NO. 80091 | CONTR. CONTR. N62470-81-B-4163
SCALE AS SHOWN | SPEC. 05-81-164

U-19

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |




FOR LEGEND SEE SHT. U-20

GRAPHIC SCALES

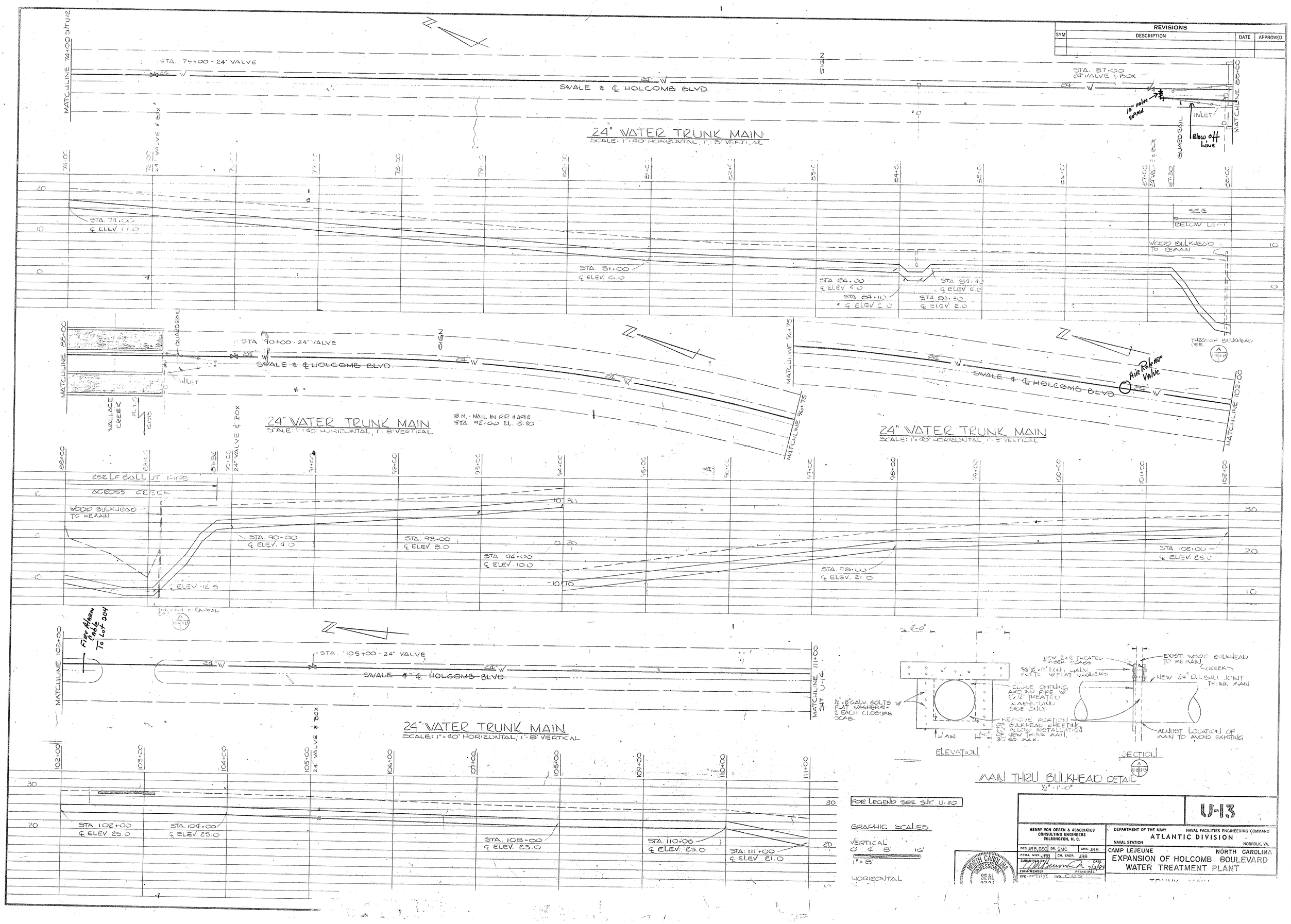
VERTICAL
0 4' 8' 16'
1" = 8'

HORIZONTAL
0 20' 40' 80'
1" = 40'

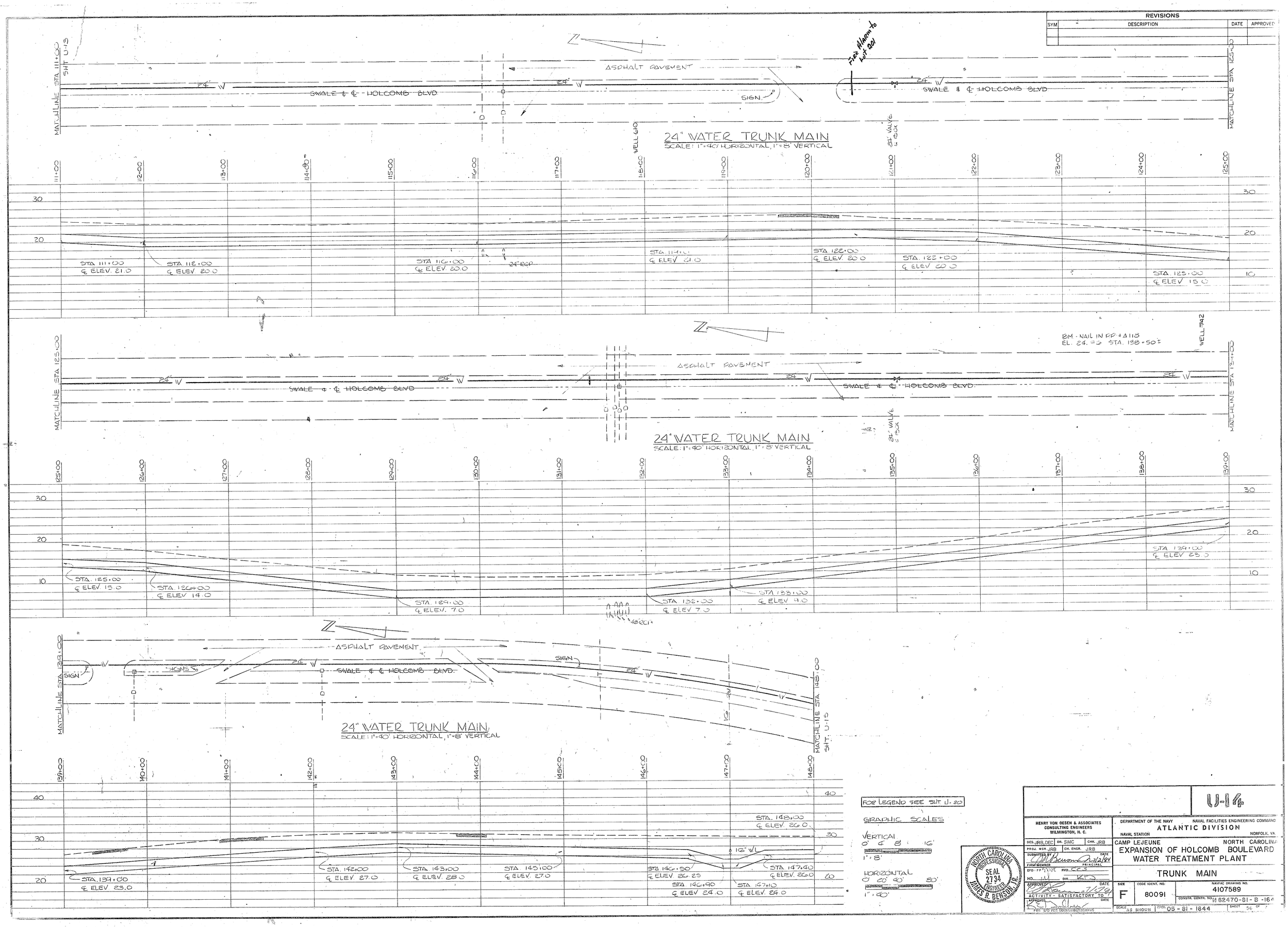
NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. BENSON, JR.

| | |
|---|---|
| HENRY VON OESEN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C. | DEPARTMENT OF THE NAVY NAVAL ATLANTIC NAVAL STATION |
| DES. JRB, DEC DR. SMC CHK. JRB | CAMP LEJEUNE |
| PROJ. MGR. JRB CH. ENGR. JRB | EXPANSION OF HOLC WATER TREATME |
| SUBMITTED BY DATE 7/2/04 FIRM MEMBER PRINCIPAL | TRUNK M |
| EFD: FPT RVD. CGS | |
| HD. DIR. | |
| APPROVED DATE 5/7/04 ACTIVITY - SATISFACTORY TO | SIZE F · CODE IDENT. NO. 80091 · CONTR. CON |
| APPROVED DATE FOR - EFD FOR COMMANDER, NAVFAC | SCALE AS SHOWN · DWG. 05 - 81 - 1 |

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |



| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |




FOR LEGEND SEE SHT. U-20

GRAPHIC SCALES

VERTICAL 0' 4' 8' 16' 1"=8'

HORIZONTAL 0' 20' 40' 80' 1"=40'

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. BENSON, JR.

U-14

HENRY VON OESEN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION — ATLANTIC DIVISION — NORFOLK, VA.

DES. JRB, DEC — DR. SMC — CHK. JRB
PROJ. MGR. JRB — CH. ENGR. JRB
SUBMITTED BY — DATE — FIRM MEMBER — PRINCIPAL
EFD - FP - WL — RVD. CCS
HD. — DIR. KD
APPROVED — DATE 7/6/84
ACTIVITY - SATISFACTORY TO — DATE
APPROVED — DATE
FOR SPEC. NO. — CONSTRUCTION DRAWING

CAMP LEJEUNE — NORTH CAROLINA

# EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

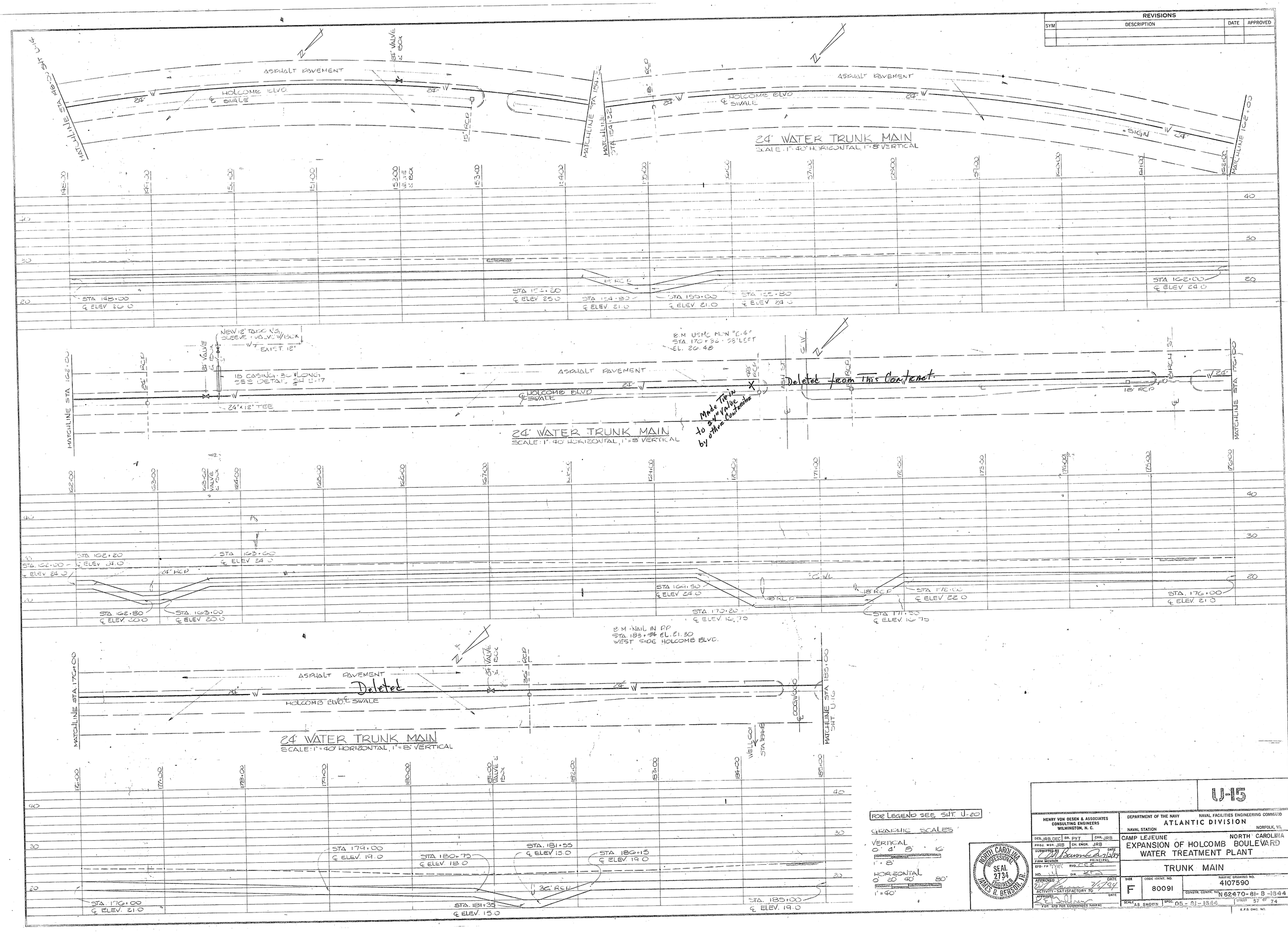
## TRUNK MAIN

SIZE: F — CODE IDENT. NO.: 80091 — NAVFAC DRAWING NO.: 4107589

CONSTR. CONTR. NO.: N62470-81-B-1644

SCALE: AS SHOWN — FY: 05 - 81 - 1644 — SHEET 56 OF

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |




FOR LEGEND SEE SHT. U-20

GRAPHIC SCALES

VERTICAL
0 4' 8' 16'
1" = 8'

HORIZONTAL
0 20 40' 80'
1" = 40'

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES H. GEISSLER, JR.

U-15

HENRY VON DESEN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.

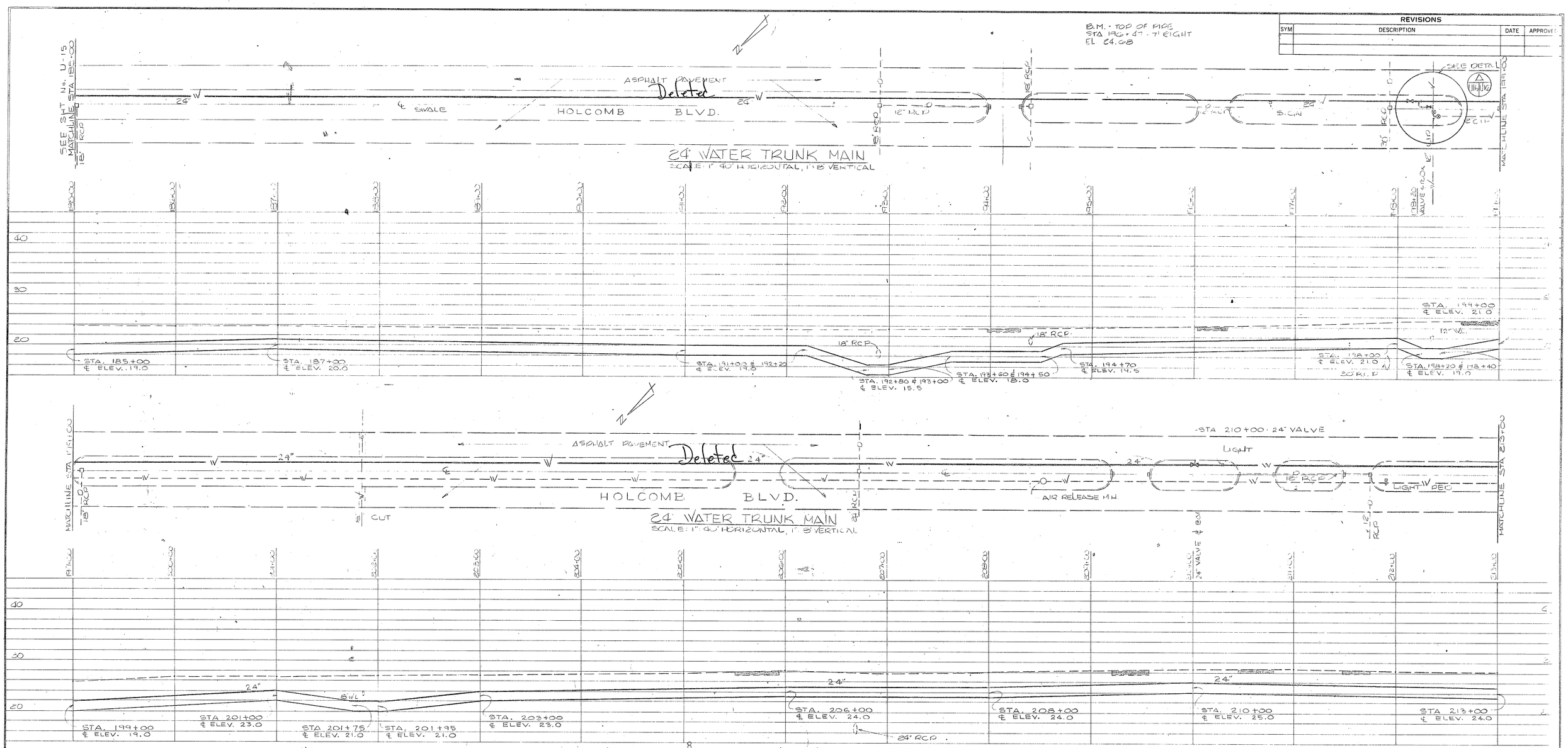
CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD
WATER TREATMENT PLANT

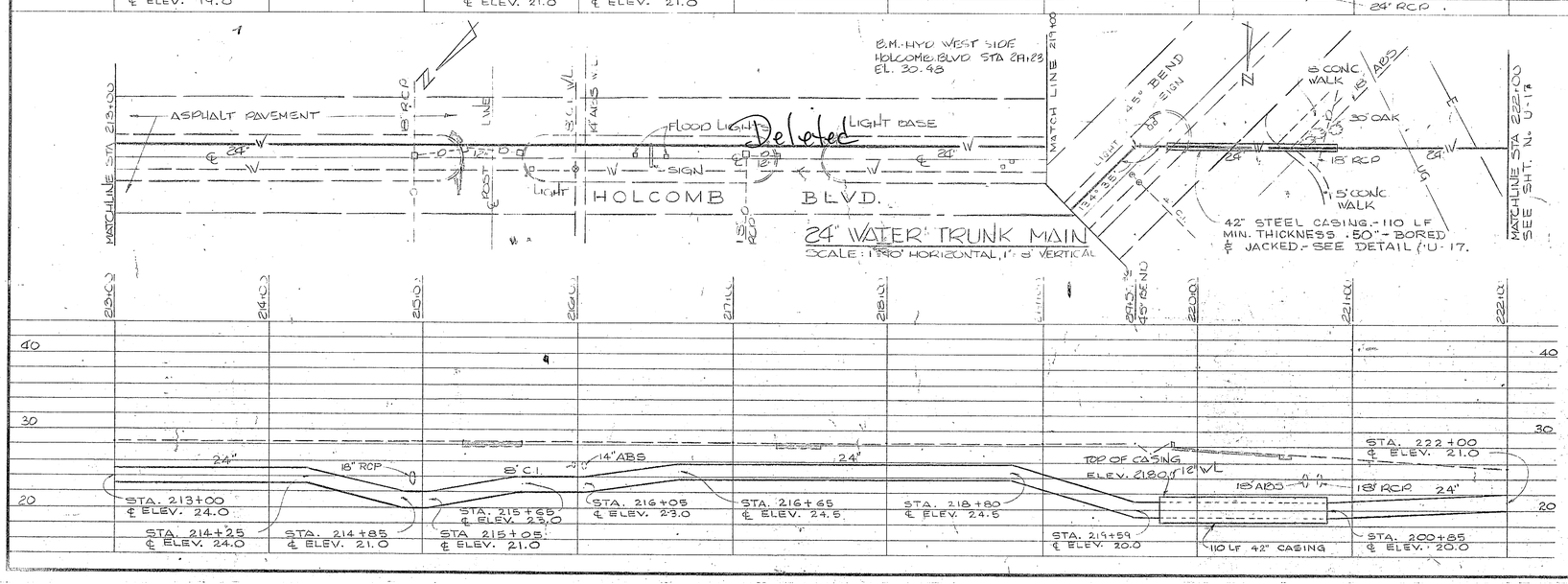
TRUNK MAIN

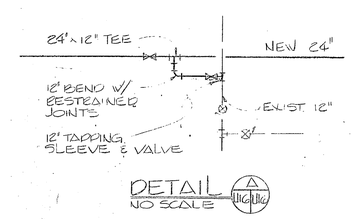
| | | | |
|---|---|---|---|
| DES. JRB, DEC | DR. PYT | CHK. JRB | |
| PROJ. MGR. JRB | CH. ENGR. JRB | | |
| SUBMITTED BY | | DATE | |
| FIRM MEMBER | PRINCIPAL | | |
| EFD-FP | RVD. CCS | | |
| HD. | DIR. | | |
| APPROVED | | DATE 7/4/94 | |
| ACTIVITY - SATISFACTORY TO | | DATE | |
| APPROVED FOR USE FOR COMMANDER NAVFAC | | DATE | |

| SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 4107590 |
| SCALE AS SHOWN | SPEC. 05-81-1846 | CONSTR. CONTR. NO. N62470-81-B-1844 |
| | | GRADEY 57 74 |
| | | E.F.D. DWG. NO. |

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |




DETAIL
NO SCALE

FOR LEGEND SEE SHT. U-20

GRAPHIC SCALES

VERTICAL
0 4' 8' 16'
1" = 8'

HORIZONTAL
0 20' 40' 80'
1" = 40'

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. BENSON, JR.

U-16

HENRY VON DESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.

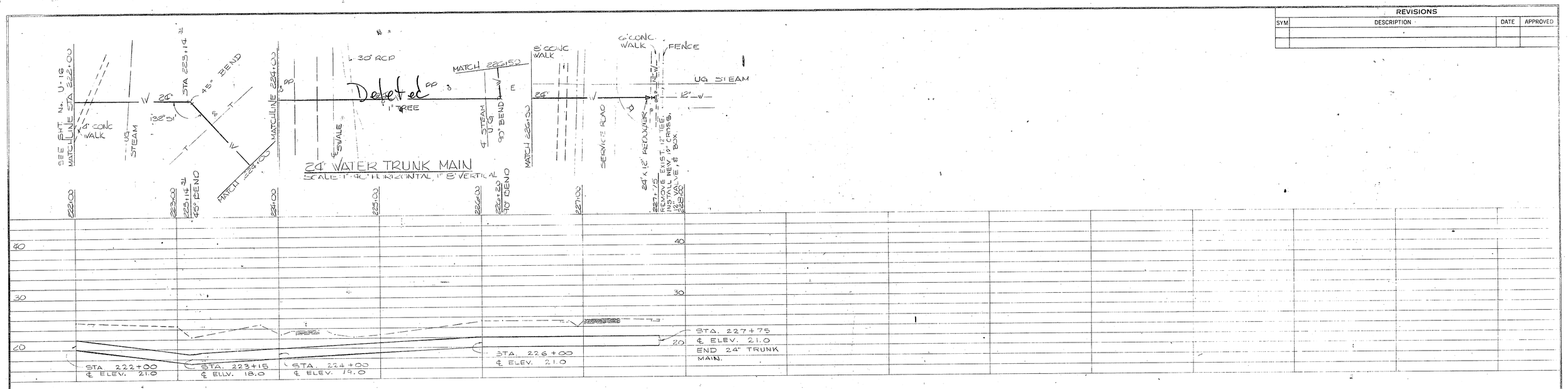
CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

TRUNK MAIN

DES. JRB, DEC | DR. PYT | CHK. JRB
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY — DATE 2/12/84
FIRM MEMBER — PRINCIPAL
EFD — RVD.
HD. — DIR.
APPROVED — DATE
ACTIVITY - SATISFACTORY TO
APPROVED — DATE
FOR EFD FOR COMMANDER NAVFAC

SIZE: F | CODE IDENT. NO.: 80091 | NAVFAC DRAWING NO.: 4107591
CONSTR. CONTR. NO.: N62470-81-B-1844
SCALE: AS SHOWN | SPEC. 05-81-1844 | SHEET 58 OF 74

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |







## DETAIL PIPE SUPPORT

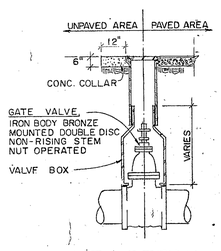



## DETAIL CASING

NO SCALE

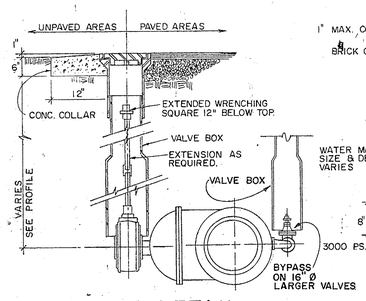

## STONE DRIVE DETAIL

NO SCALE



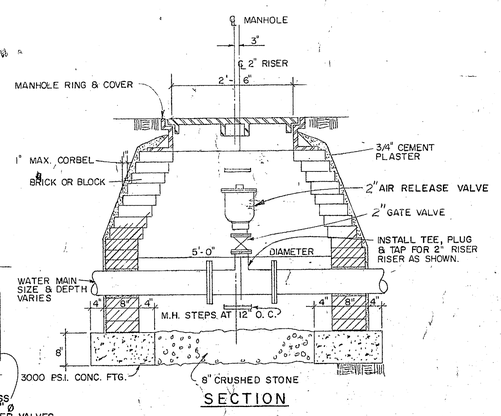

## VALVE DETAIL

NO SCALE (12" OR SMALLER)




## VALVE DETAIL

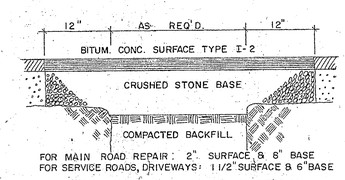
NO SCALE (14" OR LARGER)




SECTION

## TYPICAL AIR RELEASE MANHOLE

NO SCALE




FOR MAIN ROAD REPAIR: 2" SURFACE & 8" BASE
FOR SERVICE ROADS, DRIVEWAYS: 1 1/2" SURFACE & 6" BASE

## PAVEMENT REPAIR DETAIL

NO SCALE

FOR LEGEND SEE SHT. U-20

GRAPHIC SCALES

VERTICAL
0' 4' 8' 16'
1" = 8'

HORIZONTAL
0' 20' 40' 80'
1" = 40'

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. BENSON, JR.

U-17

HENRY VON OESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.

DES. JRB, DEC | DR. PYT | CHK. JRB
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY: [signature] DATE 2/12/84
FIRM MEMBER | PRINCIPAL
EFD-FP 27177C | RVD. CCS
HD. [illegible] | DIR. KFD
APPROVED [signature] DATE 7/5/84
ACTIVITY - SATISFACTORY TO
APPROVED [signature] DATE
FOR EFD FOR COMMANDER NAVFAC

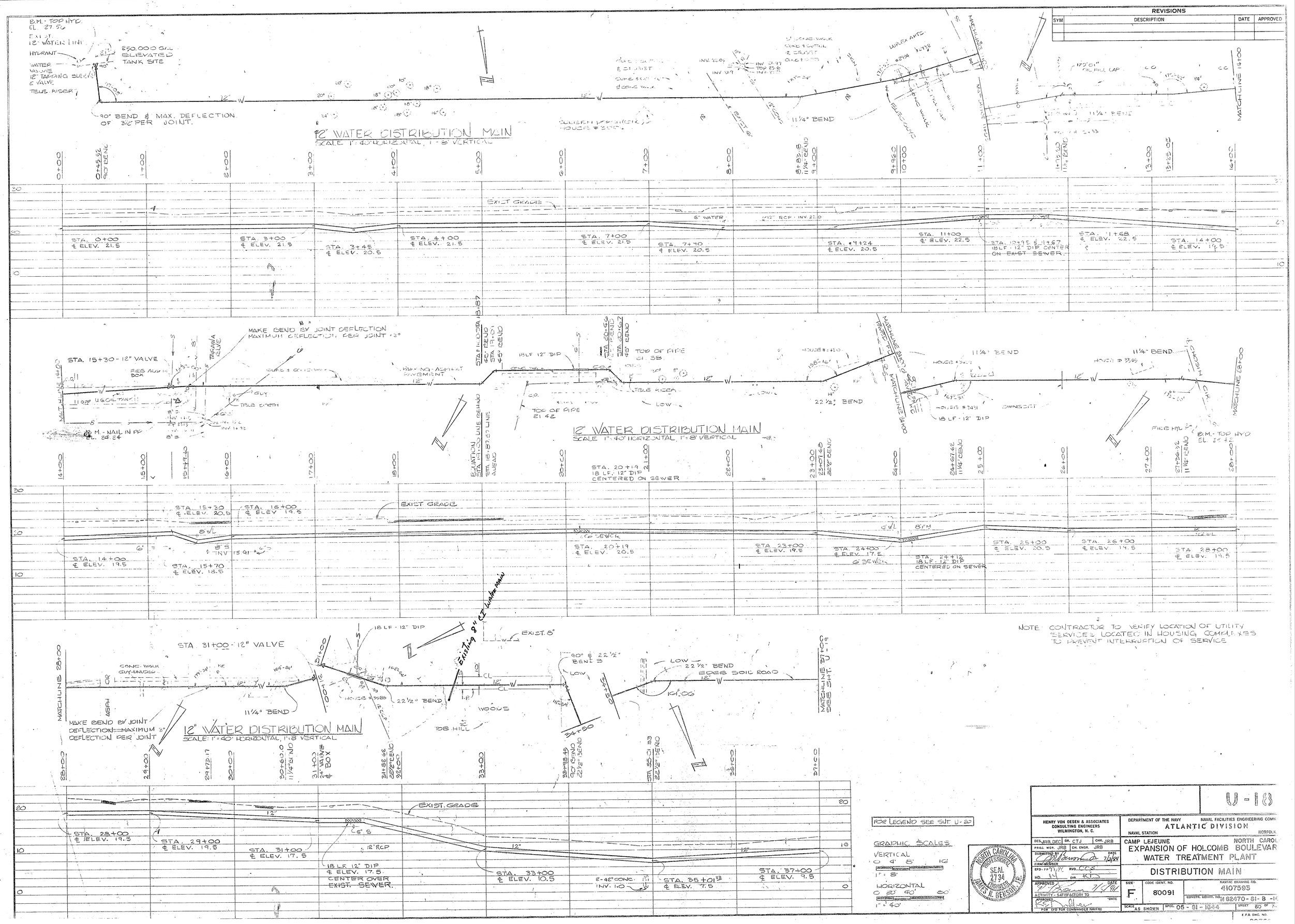
DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.

CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD
WATER TREATMENT PLANT

TRUNK MAIN

SIZE: F | CODE IDENT. NO.: 80091 | NAVFAC DRAWING NO.: 41097592
CONSTR. CONTR. NO.: N62470-81-B-1644
SCALE: AS SHOWN | SPEC.: 05-81-1644 | SHEET 59 OF 74
E.F.D. DWG. NO.

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |




NOTE: CONTRACTOR TO VERIFY LOCATION OF UTILITY SERVICES LOCATED IN HOUSING COMPLEXES TO PREVENT INTERRUPTION OF SERVICE

FOR LEGEND SEE SHT U-20

GRAPHIC SCALES

VERTICAL 0 4' 8' 16' 1" = 8'

HORIZONTAL 0 20' 40' 80' 1" = 40'

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES H. BERSON, JR.

U-18

HENRY VON OESEN & ASSOCIATES CONSULTING ENGINEERS WILMINGTON, N. C.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMM. — ATLANTIC DIVISION — NAVAL STATION NORFOLK

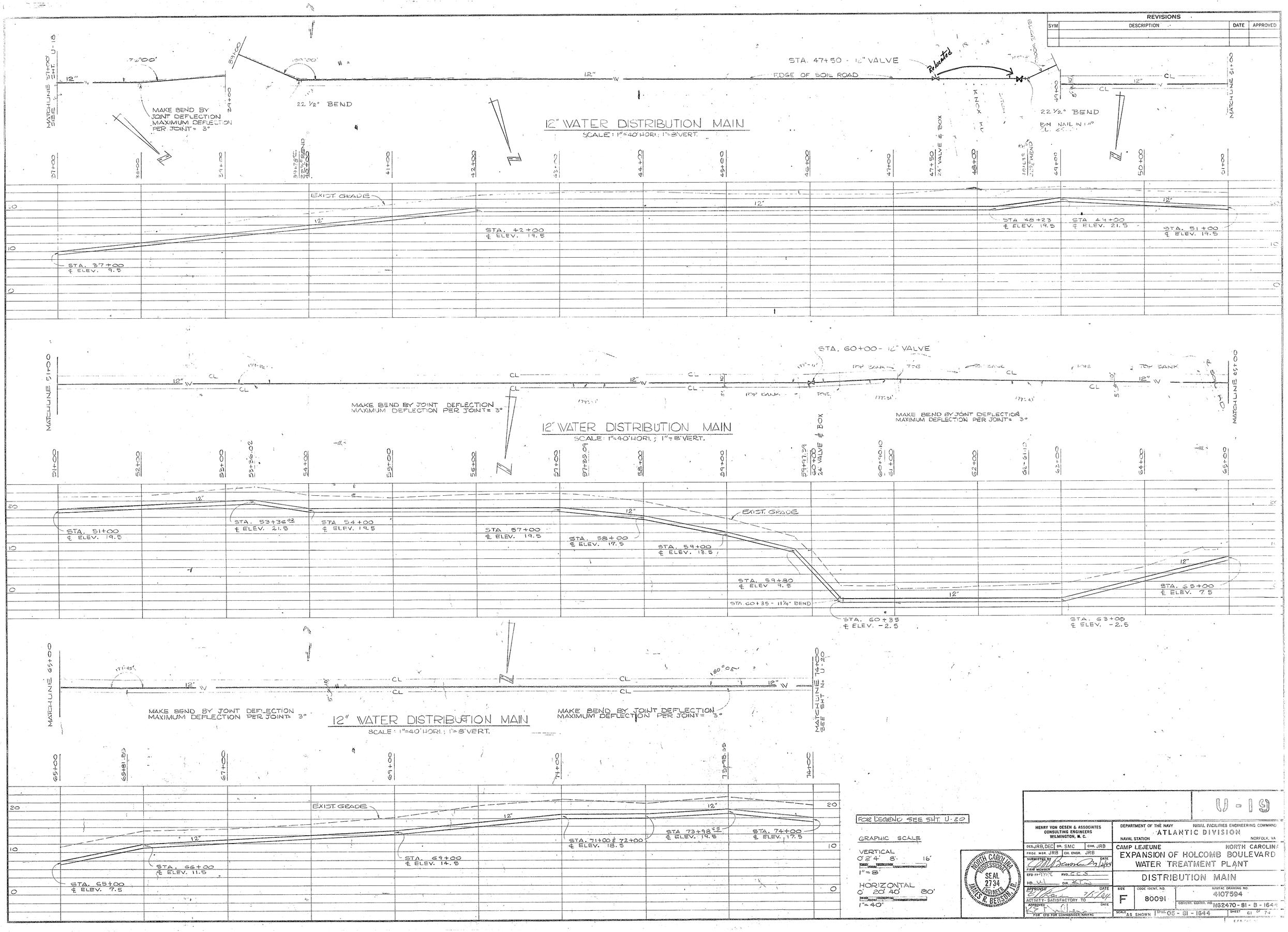
DES. JRB, DEC | DR. CTJ | CHK. JRB
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY — DATE 7/6/84
FIRM MEMBER
EFD - FP 71 RVD. CCS
HD. DR.
APPROVED — DATE 7/7/84
ACTIVITY - SATISFACTORY TO
APPROVED — DATE
FOR EFD FOR COMMANDER NAVFAC

CAMP LEJEUNE — NORTH CAROL
EXPANSION OF HOLCOMB BOULEVAR
WATER TREATMENT PLANT

DISTRIBUTION MAIN

SIZE F | CODE IDENT. NO. 80091 | NAVFAC DRAWING FID. 4107593
CONSTR. CONTR. NO. N 62470-81-B-16
SCALE AS SHOWN | SPEC. 05-81-1834 | SHEET 60 OF 7
E.F.D. DWG. NO.

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |




FOR LEGEND SEE SHT. U-20

GRAPHIC SCALE

VERTICAL
0' 2' 4' 8' 16'
1" = 8'

HORIZONTAL
0' 20' 40' 80'
1" = 40'

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. BENSON, JR.

U-19

HENRY VON OESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.

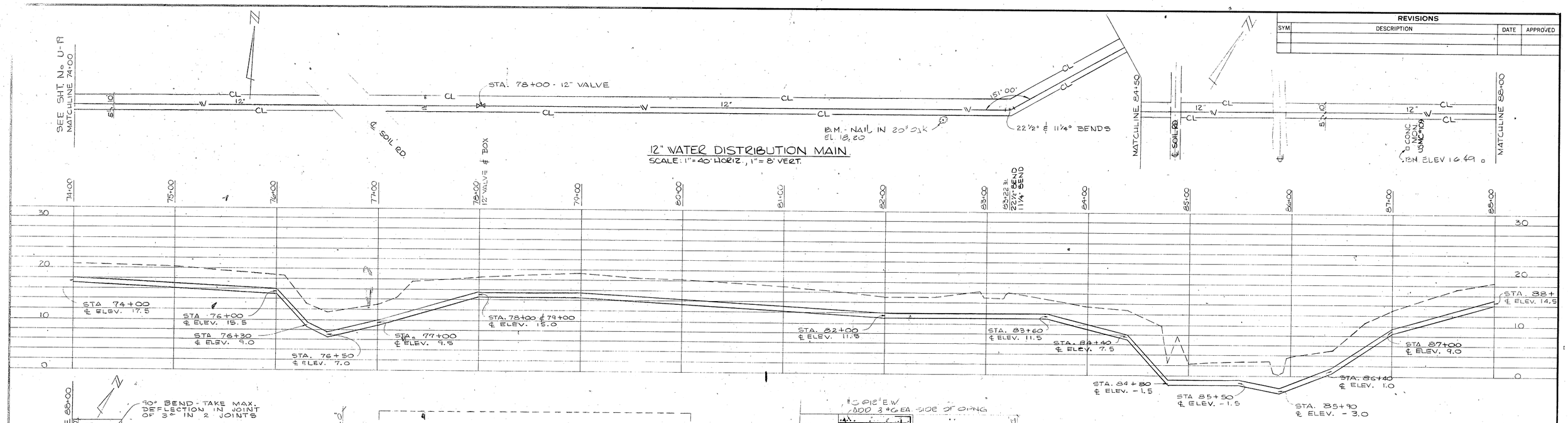
DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA

DES. JRB, DEC — DR. SMC — CHK. JRB
PROJ. MGR. JRB — CH. ENGR. JRB
SUBMITTED BY — DATE
FIRM MEMBER
EFD EP-17 — RVD. CCS
HD — DIR.
APPROVED — DATE
ACTIVITY - SATISFACTORY TO
APPROVED — DATE
FOR EFD FOR COMMANDER NAVFAC

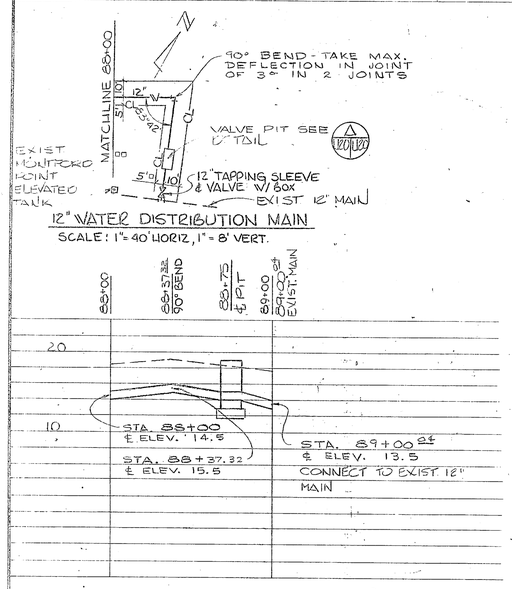
CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
DISTRIBUTION MAIN

SIZE: F — CODE IDENT. NO.: 80091 — NAVFAC DRAWING NO.: 4107594
CONTR. CONTR. NO.: NS2470-81-B-1644
SCALE: AS SHOWN — SPEC. 05-81-1644 — SHEET 61 OF 74

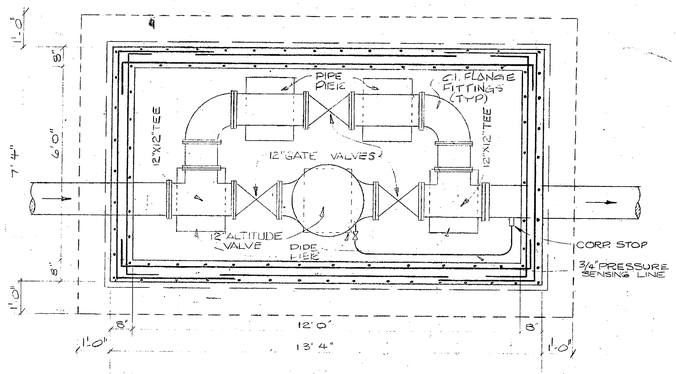
| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |



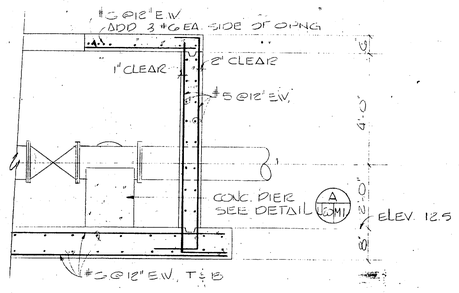

12" WATER DISTRIBUTION MAIN.
SCALE: 1" = 40' HORIZ., 1" = 8' VERT.



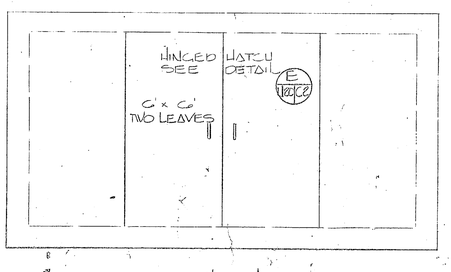

12" WATER DISTRIBUTION MAIN
SCALE: 1" = 40' HORIZ., 1" = 8' VERT.




PIT PLAN




SECTION




TOP PLAN

VALVE PIT DETAIL
1/2" = 1'-0"

## WELL SITES & PLAN & PROFILE LEGEND

| | EXIST | NEW |
|---|---|---|
| FORCE MAIN | —FM— | FM |
| FINISH WATER MAIN | —W— | W |
| RAW WATER MAIN | —RW— | RW |
| BACKWASH RETURN | —BR— | BR |
| BACKWASH DRAIN | —BD— | BD |
| BACKWASH | —BW— | BW |
| PLANT EFFLUENT | —E— | E |
| UNDERDRAIN | —UD— | UD |
| TRANSMISSION MAIN | —WT— | WT |
| DRAIN LINE | —D— | D |
| SANITARY SEWER | —S— | |
| TELEPHONE LINE | —T— | T |
| UNDERGROUND CABLE | —UGC— | UGC |
| DITCH | | |
| FENCE | —x— | xx |
| RAILROAD | | |
| VALVE | | |
| MANHOLE | —O— | |
| CLEANOUT | —CO— | |
| INLET JUNCTION BOX | —□— | |
| REDUCER | | |
| CULVERT W/ 2 FES | | |
| VALVE PIT | —□— | |
| BUILDINGS, HOUSES | | |
| BENCH MARK | △BM | |
| CLEARING LIMIT | | CL |
| EDGE OF WOODS | | |
| TREE | | |
| EDGE OF WATER | | |
| STONE DRIVE | STONE DRIVE | STONE DRIVE |

## ELECTRICAL LEGEND

| | EXIST | NEW |
|---|---|---|
| POWER POLE | ○ | ● |
| AERIAL PRIMARY ELEC. DISTRIBUTION LINE | —P— | —P— |
| UNDERGROUND PRIMARY SERVICE LINE | | —UP— |
| UNDERGROUND SECONDARY SERVICE | | —S— |
| POWER POLE W/ GUY | ○→ | ●→ |
| POWER POLE W/ TRANSFORMER OR TRANSFORMER BANK | ○ | ● |
| POLE NUMBER: SEE POLE SCHEDULE ON SHT. EU-2 FOR EXACT CHARACTERISTICS | | |

GRAPHIC SCALES
VERTICAL 0 2' 4' 8' 16' — 1" = 8'
HORIZONTAL 0 20' 40' 80' — 1" = 40'
0 6' 1' 2' 3' 4' — 1/2" = 1'-0"

NORTH CAROLINA PROFESSIONAL SEAL 2734 ENGINEER JAMES R. BENSON, JR.

U - 20

HENRY VON OESEN & ASSOCIATES
CONSULTING ENGINEERS
WILMINGTON, N. C.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VA.

DES. JRB, DEC | DR. SMC | CHK. JRB
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY — FIRM MEMBER — PRINCIPAL — DATE
EFD: FP — RVD. CCS
HD. — DIR. KLS
APPROVED — DATE 7/2/64
ACTIVITY - SATISFACTORY TO
APPROVED — FOR EFD FOR COMMANDER NAVFAC — DATE

CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

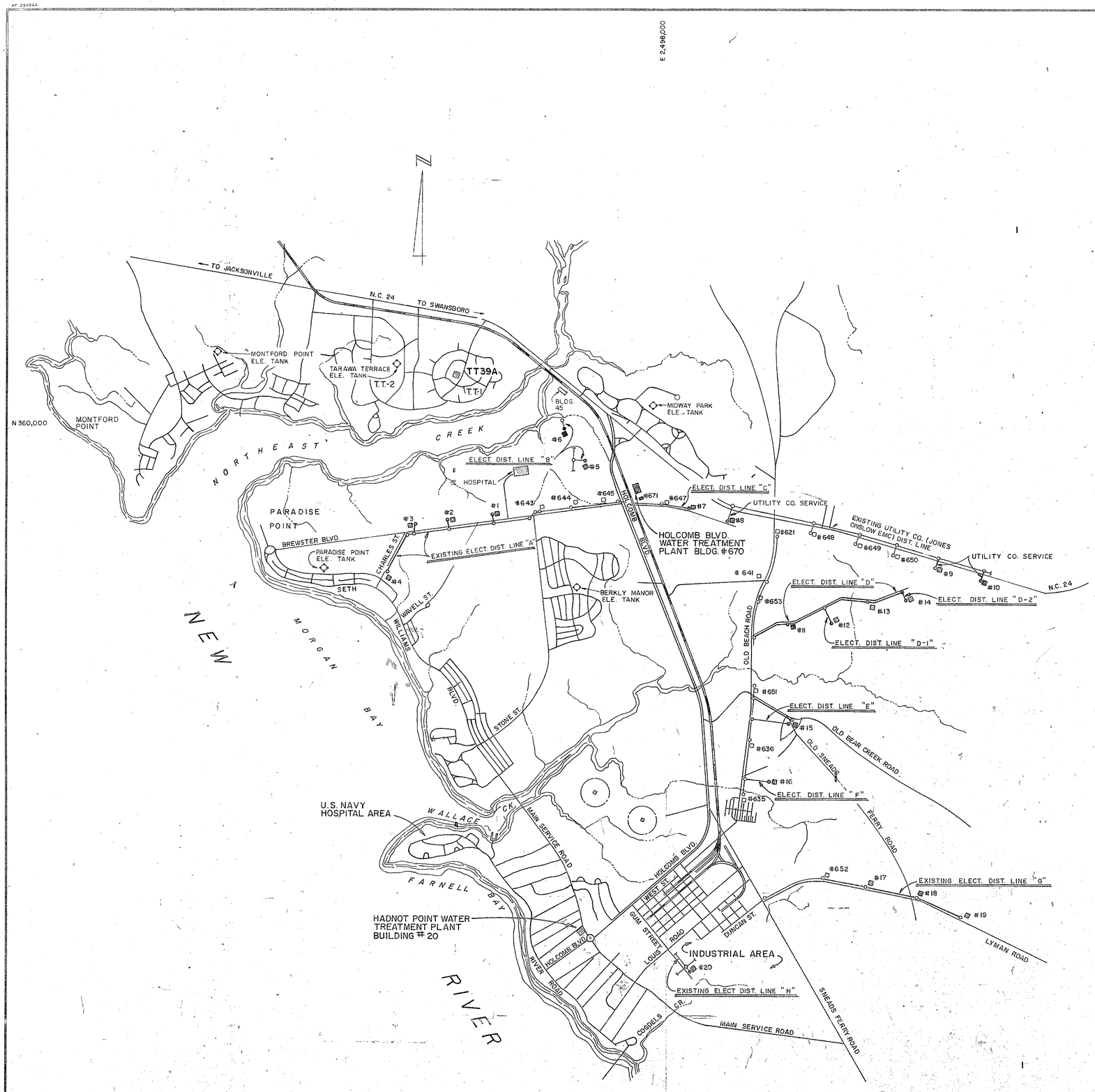
DISTRIBUTION MAIN

| SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 4107595 |

CONSTR. CONTR. NO. N62470-81-B-1644
SCALE AS SHOWN | SPEC. 05-81-1644 | SHEET 62 OF 74

AF 29494A

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |




## ELECTRICAL DISTRIBUTION SYSTEM FOR WELLS # 1 - 20

SCALE 1" = 2000'

| ELECTRICAL LEGEND | | |
|---|---|---|
| SYMBOL | | DESCRIPTION |
| EXISTING | NEW | |
| □# | ▨# | WELL SITE |
| —o— | —o— | POWER POLE & PRIMARY AERIAL SERVICE |

| CROSS - REFERENCE INDEX | |
|---|---|
| ELECT. DIST. LINE | SHEET NUMBER |
| A | U-1 |
| B | C-3 |
| C | U-4 |
| D | U-2, U-3, U-4 |
| D-1 | U-4 |
| D-2 | U-4 |
| E | U-5 |
| F | U-6 |
| G | U-6 |
| H | U-5 |

GRAPHIC SCALE
2000' 0 2000' 4000'
1" = 2000'

NORTH CAROLINA PROFESSIONAL SEAL 3433 REGISTERED ENGINEER

U-1

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DES. RDM | DR. SMC, CTJ | CHK. RDM
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY | DATE
FIRM MEMBER | PRINCIPAL
EFD FP | RVD
HD. EH | DIR.
APPROVED | DATE
ACTIVITY - SATISFACTORY TO
APPROVED | DATE
FOR EFD FOR COMMANDER NAVFAC

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA
CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
ELECTRICAL DISTRIBUTION SYSTEM

| SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO |
|---|---|---|
| F | 80091 | 4107596 |
| | | CONTR. CONTR NO N62470-81-B-1644 |
| SCALE AS SHOWN | SPEC. 05-81-1644 | SHEET 63 OF 74 |

EFD DWG NO

| REVISIONS | | | |
|---|---|---|---|
| SYM. | DESCRIPTION | DATE | APPROVED |
| | | | |

# SCHEDULE OF POLES

NOTE: "X-FB, 15FR3-N", ECT. ARE POLE DETAIL DESIGNATION SYMBOLS. REFER TO LANDIV SKETCHES TS-16302L-1.1 THROUGH TS-16302L- BOUND WITH SECTION 16302 OF THE SPECIFICATIONS FOR AN EXPLANATION AND PROPER USE OF THE SYMBOLS.

| | POLE NUMBER | EQUIPMENT | WELL SITE NO. | POLE EXIST | POLE NEW | POLE HEIGHT | POLE CLASS | CROSSARM CONSTRUCTION | HORIZONTAL (TANG. OR ANGLE) CONSTRUCTION | HORIZONTAL DEADEND CONSTRUCTION | SHEET NUMBER REFERENCE | ARMLESS CONSTRUCTION | TRANSFORMER | PROTECTIVE EQUIP. | UNDERGR. TERM. | GUY | ANCHOR | CONDUIT RISER TYPE | CONDUIT RISER COND. SIZE | CONDUIT RISER WIRE SIZE | SECONDARY — SEE WELL SITE PLAN | POLE GROUND | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ELECTRICAL DISTRIBUTION LINE "A" | A-1, A-2 | EXISTING | 1,2 | X | – | 30 | 4 | X-FB | 15FR3 | – | U-1, C-3 | – | – | – | – | – | – | – | – | – | – | – | |
| | | NEW | | – | – | – | – | – | – | 15FDE3 | U-1, C-3 | – | – | – | – | X | X | – | – | – | – | – | |
| | A-3 | EXISTING | 3 | X | – | 30 | 4 | DX-DE-FB<br>DX-DE-FB<br>X-FB | 15FR3<br>15FR2 | – | U-1, C-3 | – | – | – | – | – | – | – | – | – | – | – | REMOVE X-FB & 1-T (≈ 25 KVA) |
| | | NEW | | – | – | – | – | DX-DE-FB | – | 15FDE3 | U-1, C-3 | – | – | – | – | X | X | – | – | – | – | – | |
| | A-4 | EXISTING | 4 | X | – | 30 | 4 | X-FB<br>X-FB | 15FR3<br>15FR2 | – | U-1, C-3 | – | – | – | – | – | – | – | – | – | – | – | *3 WIRE, DELTA CONNECTED 12.47 KV PRIMARY |
| | | NEW | | – | – | – | – | X-FB | – | – | U-1, C-3 | – | * TTT 10 KVA | X | – | – | – | | | | UNDER GROUND | X | |
| | A-1-1, A-2-1, A-3-1 | | 1,2,3 | – | X | 35 | 3 | DX-DE-FB<br>X-FB | – | 15FDE3 | U-1, C-3 | – | * TTT 10 KVA | X | – | X | X | B | 1 1/4" | 4 #4 | UNDER GROUND | X | *3 WIRE, DELTA CONNECTED 12.47 KV PRIMARY |
| ELECTRICAL DISTRIBUTION LINE "B" | B-1 | EXISTING | 5 | X | – | 30 | 4 | X-FB | 15FR3-N | – | C-3 | – | – | – | – | – | – | – | – | – | – | – | COMMUNICATIONS CABLE TO REMAIN |
| | | NEW | | – | – | – | – | DX-DE-FB | – | 15FDE3-N | C-3 | – | – | – | – | X | X | – | – | – | – | – | |
| | B-2 | EXISTING | 6 | X | – | 30 | 4 | X-FB | 15FR3-N | – | C-3 | – | – | – | – | – | – | – | – | – | – | – | COMMUNICATIONS CABLE TO REMAIN |
| | | NEW | | – | – | – | – | DX-DE-FB | – | 15FDE3-N | C-3 | – | – | – | – | SPAN | – | – | – | – | – | – | |
| | B-1-1 | | 5 | – | X | 30 | 4 | X-FB | 15FR3-N | – | C-3 | – | – | – | – | – | – | – | – | – | – | X | |
| | B-1-2, B-2-1 | | 5,6 | – | X | 35 | 3 | DX-DE-FB<br>X-FB | – | 15FDE3-N | C-3 | – | TTT - 5KVA | X | – | X | X | B | 1" | 4 #6 | UNDER GROUND | X | |
| | B-2-A | | 6 | – | X | *35 | *3 | – | – | – | C-3 | – | – | – | – | X | X | – | – | – | – | X | SPAN GUY POLE ONLY |
| ELECTRICAL DISTRIBUTION LINE "C" | C-1 | EXISTING | 7 | X | – | 30 | 4 | DX-DE-FB<br>DX-DE-FB | – | 15FDE3-N<br>15FDE3-N | U-4 | – | – | – | – | – | – | – | – | – | – | – | *CONVERT EXISTING 15FDE3-N TO 15FDDE3-N |
| | | NEW | | – | – | – | – | – | – | * | | – | – | – | – | – | – | – | – | – | – | – | |
| | C-2, C-3, C-4, C-5, C-6, C-7, C-8, C-9 C-10 | | | – | X | *30 | 4 | X-FB | 15FR3-N | – | U-4 | – | – | – | – | – | – | – | – | – | – | X | |
| | C-11 | | | – | X | 35 | 3 | DX-DE-FB<br>X-FB | – | 15FDE3-N | U-4, C-4 | – | TTT - 5KVA | X | – | X | X | B | 1" | 4 #6 | UNDER GROUND | X | |
| | EXISTING RAW WATER LINE "C" | | 8-10 | – | – | – | – | – | – | – | U-5 | – | – | – | – | – | – | – | – | – | – | – | AERIAL SERVICE AND METERING BY UTILITY CO. |
| ELECTRICAL DISTRIBUTION LINE "D" | D-1 | EXISTING | 11<br>12<br>13<br>14 | X | – | 30 | 4 | DX-DE-FB | – | 15FDE3-N | U-2 | – | – | – | – | X | X | – | – | – | – | – | |
| | | NEW | | – | – | – | – | DX-DE-FB | – | 15FDE3-N | U-2 | – | – | – | – | SPAN | – | – | – | – | – | – | |
| | D-1-A, D-6-A, D-21-A, D-23-A, D-39-A, D-39-B | | | – | X | *30 | *4 | – | – | – | U-2, U-3 | – | – | – | – | X | X | – | – | – | – | X | SPAN GUY POLE ONLY |
| | D-6, D-23. | | | – | X | 30 | 4 | X-FB | 15FR3-N | – | U-2, U-3 | – | – | – | – | X | – | – | – | – | – | X | |
| | D-7, D-25. D-27 | | | | X | 30 | 4 | X-FB | 15FR3-N | – | U-2, U-3 | – | – | – | – | – | – | – | – | – | – | X | |
| | D-3, D-9, D-31, D-32 | | | – | X | 30 | 4 | X-FB | 15FR3-N | – | U-2, U-3 | – | – | – | – | X | X | – | – | – | – | X | |
| | D-2, D-4, D-5, D-8 D-10, D-12, D-13, D-14 D-15, D-17, D-18, D-19 D-20, D-22, D-24, D-26 D-28, D-29, D-33, D-34 D-35, D-36, D-37, D-38 | | | – | X | 30 | 4 | X-FB | 15FR3-N | – | U-2, U-3 | – | – | – | – | – | – | – | – | – | – | X | |
| | D-30 | | 13 | – | X | 35 | 3 | DX-DE-FB<br>X-FB | – | 15FDE3-N | U-3, U-5 | – | TTT 10KVA | X | – | – | – | B | 1 1/4" | 4 #4 | UNDER GROUND | X | |
| | D-21 (SEE D-21 BELOW) | | – | – | – | – | – | – | – | – | | – | – | – | – | – | – | – | – | – | – | X | |
| | D-39 (SEE D-39 ABOVE RIGHT) | | 14 | – | – | – | – | – | – | – | | – | – | – | – | – | – | – | – | – | – | X | |
| | D-16 | | | | X | 30 | 4 | X-FB | 15FR3-N | – | U-2 | – | – | – | – | – | – | – | – | – | – | X | |
| | D-11 | | 11 | – | X | 35 | 3 | DX-DE-FB<br>X-FB | – | 15FDE3-N | U-2, C-5 | – | TTT 10 KVA | X | – | – | – | B | 1 1/4" | 4 #4 | UNDER GROUND | X | |
| ELECTRICAL DIST. LINE "D-1" | D-21 | | 12 | – | X | 30 | 4 | DX-DDE-FB<br>DX-DE-FB | – | 15FDDE3-N<br>15FDE3-N | U-3, U-4 | – | – | – | – | SPAN | – | – | – | – | – | X | |
| | D-21-A | | | – | X | *30 | *4 | – | – | – | U-3, U-4 | – | – | – | – | X | X | – | – | – | – | X | SPAN GUY POLE ONLY |
| | D-21-1, D-21-2, D-21-3 | | | – | X | 30 | 4 | X-FB | 15FR3-N | – | U-4 | – | – | – | – | – | – | – | – | – | – | X | |
| | D-21-4 | | | – | X | 35 | 3 | DX-DE-FB<br>X-FB | – | 15FDE3-N | U-4, U-5 | – | TTT 10 KVA | X | – | X | X | B | 1 1/4" | 4 #4 | UNDER GROUND | X | |

| | POLE NUMBER | EQUIPMENT | WELL SITE NO. | POLE EXIST | POLE NEW | POLE HEIGHT | POLE CLASS | CROSSARM CONSTRUCTION | HORIZONTAL (TANG. OR ANGLE) CONSTRUCTION | HORIZONTAL DEADEND CONSTRUCTION | SHEET NUMBER REFERENCE | ARMLESS CONSTRUCTION | TRANSFORMER | PROTECTIVE EQUIP. | UNDERGR. TERM. | GUY | ANCHOR | CONDUIT RISER TYPE | CONDUIT RISER COND. SIZE | CONDUIT RISER WIRE SIZE | SECONDARY — SEE WELL SITE PLAN | POLE GROUND | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ELECTRICAL DISTRIB. LINE "D-2" | D-39 | | 14 | – | X | 30 | 4 | DX-DE-FB<br>DX-DE-FB | – | 15FDE3-N | U-4 | – | – | – | – | SPAN | – | – | – | – | – | X | |
| | D-39-A, D-39-B | | | – | X | 30 | 4 | – | – | – | U-6 | – | – | – | – | X | X | – | – | – | – | X | SPAN GUY POLE ONLY |
| | D-39-1, D-39-2, D-39-3 | | | – | X | 30 | 4 | X-FB | 15FR3-N | – | U-4 | – | – | – | – | – | – | – | – | – | – | X | |
| | D-39-4 | | | – | X | 35 | 3 | DX-DE-FB<br>X-FB | – | 15FDE3-N | U-4, C-5 | – | TTT 15 KVA | X | – | X | X | B | 1 1/4" | 4 #3 | UNDER GROUND | X | |
| ELECTRICAL DISTRIB. LINE "E" | E-1 | EXISTING | 15 | X | – | 30 | 4 | X-FB | 15FR2-N* | – | U-5 | – | – | – | – | – | – | – | – | – | – | – | *EXTEND 3RD ø CONDUCTOR FROM POLE-X ON U-5 TO POLE E-1 - 15FR3-N. CONVERT CENTER ø-DE INSULATOR ON POLE-X WITH RIDGE INSULATOR. |
| | | NEW | | – | – | – | – | DX-DE-FB | – | 15FDE3-N | U-5 | – | – | – | – | SPAN | – | – | – | – | – | – | |
| | ** E-1-A | | | – | X | 30 | 4 | – | – | – | U-5 | – | – | – | – | X | X | – | – | – | – | X | |
| | E-2, E-3, E-4, E-5 E-6, E-7, E-8 | | | – | X | 30 | 4 | X-FB | 15FR3-N | – | U-5 | – | – | – | – | – | – | – | – | – | – | X | **SPAN GUY POLE ONLY |
| | E-9 | | | | X | 35 | 3 | DX-DE-FB<br>X-FB | – | 15FDE3-N | U-5, C-5 | – | TTT 5 KVA | X | – | X | X | B | 1" | 4 #6 | UNDER GROUND | X | |
| | E-8 | | | | X | 30 | 4 | X-FB | 15FR3-N | – | U-5 | – | – | – | – | X | X | – | – | – | – | X | |
| ELECTRICAL DISTRIB. LINE "F" | F-1 | EXISTING | 16 | X | – | 30 | 3 | DX-DE-FB<br>DX-DDE-FB | – | 15FDE3-N<br>15FDDE3-N | U-6 | – | – | – | – | X | X | – | – | – | – | – | *CONVERT EXISTING 15FDE3-N TO 15FDDE3-N |
| | | NEW | | – | – | – | – | – | – | * | U-6 | – | – | – | – | – | – | – | – | – | – | – | |
| | F-1-A | | | | X | 30 | 4 | – | – | – | U-6 | – | – | – | – | X | X | – | – | – | – | X | SPAN GUY POLE ONLY |
| | F-2, F-3, F-4, F-5 F-6, F-7 | | | – | X | 30 | 4 | X-FB | 15FR3-N | – | U-6 | – | – | – | – | – | – | – | – | – | – | X | |
| | F-8 | | | – | X | 35 | 3 | DX-DE-FB<br>X-FB | – | 15FDE3-N | U-6, C-6 | – | TTT 5 KVA | X | – | X | X | B | 1" | 4 #6 | UNDER GROUND | X | |
| ELECT. LINE "G" | G-1, G-2 G-3 | EXISTING | 17, 18, 19 | X | – | 35 | 3 | – | – | – | U-6, C-6 | LP3-N | – | – | – | – | – | – | – | – | – | – | LOWER NEUTRAL - |
| | | NEW | | – | – | – | – | X-FB | – | – | U-6, C-6 | – | TTT 15 KVA | X | – | – | – | B | 1 1/4" | 4 #3 | UNDER GROUND | – | |
| ELECT. LINE "H" DISTRIB. | H-1 | EXISTING | 20 | X | – | 35 | 4 | DX-DE-FB<br>DX-DDE-FB | – | 15FDE3-N<br>15FDDE3-N | U-5, C-6 | – | – | – | – | – | – | – | – | – | – | – | AREA LIGHTING FIXTURE & SECONDARY TO REMAIN. CONNECT EXISTING 15FDE3-N TO 15FDDE3-N. |
| | | NEW | | – | – | – | – | – | – | – | U-5, C-6 | – | – | – | – | – | – | – | – | – | – | – | |
| | H-2 | | | – | X | 35 | 3 | DX-DE-FB<br>X-FB | – | 15FDE3-N | U-5, C-6 | – | TTT 5 KVA | X | – | X | X | B | 1" | 4 #6 | UNDER GROUND | X | |

NOTES: (1) ALL PRIMARY IS 3ø 4 WIRE, 12.47/7.2 KV, WYE CONNECTED, #4 AWG BARE STRANDED COPPER, UNO.
(2) ALL TRANSFORMER CONNECTIONS ARE WYE: WYE, 12.47/7.2 KV: 120/208 V, 3ø, 4 WIRE UNLESS NOTED TO BE DELTA: WYE, 12.47 KV: 120/208V.
(3) ALL GUYS ARE 5/16" WITH 10" ANCHOR. SPAN GUYS ARE 5/16".

SAGS FOR HARD AND MEDIUM - DRAWN BARE COPPER WIRE FOR DIFFERENT SPAN LENGTHS (MEDIUM LOADING DISTRICTS)

| SIZE AWG NO. | GRADE OF CONSTRUCTION | TEMPERATURE, °F | SAGS FOR SPAN LENGTH, IN. 100 FT. | 125 FT. | 150 FT. | 175 FT. | 200 FT. |
|---|---|---|---|---|---|---|---|
| 4 | ALL | 30 | 5.5 | 8.5 | 13 | 18.5 | 25 |
| | | 60 | 8 | 12 | 18 | 24 | 32 |
| | | 90 | 12 | 17 | 23.5 | 30 | 39 |

EU-2

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION — NORFOLK, VIRGINIA
CAMP LEJEUNE — NORTH CAROLINA

EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

SCHEDULE OF POLES

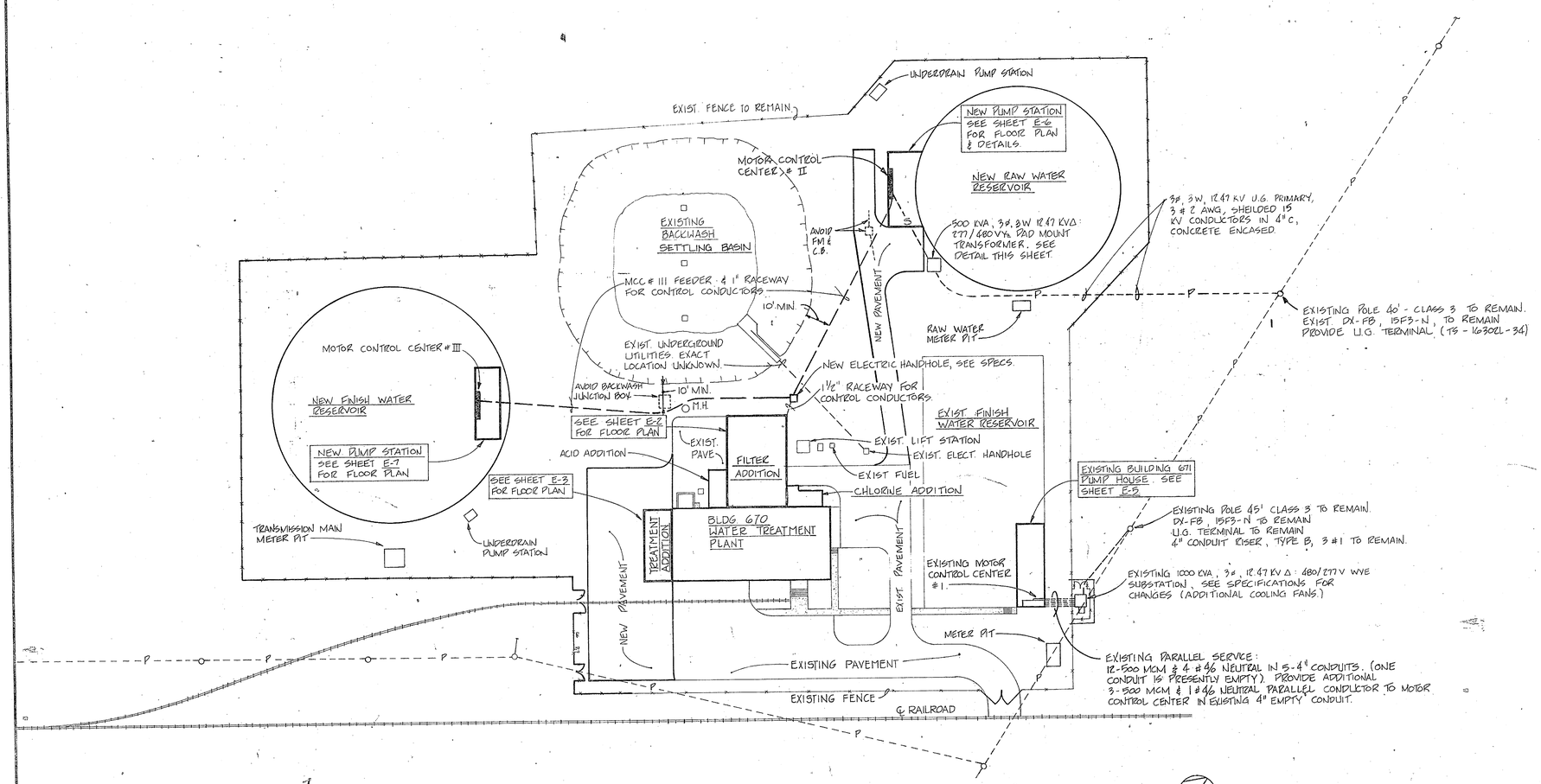
DES RDM | DR WPJ, SMC | CHK RDM
PROJ. MGR. JRB | CH. ENGR JRB
SUBMITTED BY — DATE 7/2/84
FIRM MEMBER — PRINCIPAL
EFD FP — RVD
HD — DIR
APPROVED — DATE 7/3/84
ACTIVITY - SATISFACTORY TO
APPROVED — DATE
FOR EFD FOR COMMANDER NAVFAC

SIZE F | CODE IDENT. NO. 80091 | NAVFAC DRAWING NO. 4107597
CONSTR. CONTR NO. N62470-81-B-1644
SCALE AS SHOWN | SPEC. 05-81-1644 | SHEET 64 OF 74
EFD DWG NO. 207507

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |

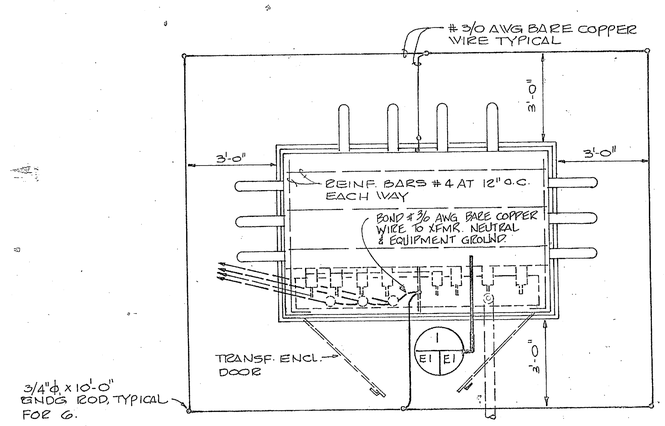
## ELECTRICAL LEGEND - SITE PLAN

| SYMBOL EXIST. | SYMBOL NEW | DESCRIPTION |
|---|---|---|
| O | | POWER POLE |
| —P— | | AERIAL PRIMARY SERVICE |
| | —P— | UNDERGROUND PRIMARY SERVICE |
| | —S— | UNDERGROUND SECONDARY SERVICE CONDUIT SIZE INDICATED ON PLAN. |
| | —— | UNDERGROUND CONDUIT |

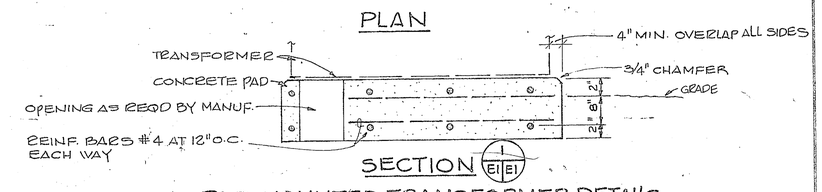



## ELECTRICAL SITE PLAN - HOLCOMB BLVD. WATER TREATMENT PLANT

SCALE: 1" = 40' - 0"



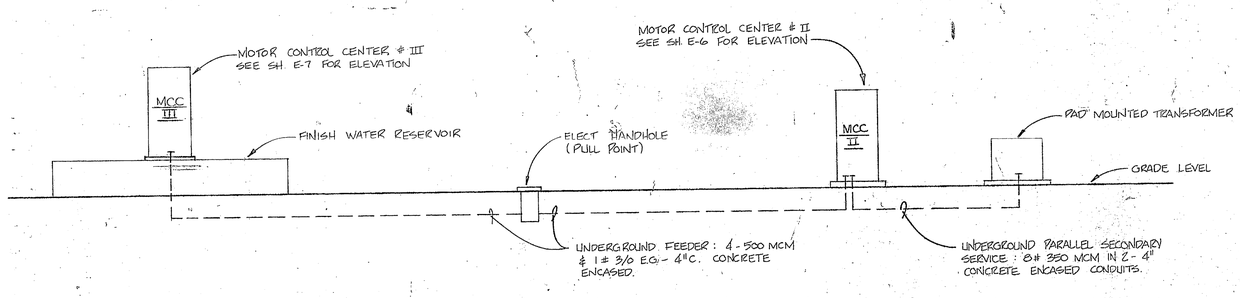

## PLAN




## SECTION

## PAD MOUNTED TRANSFORMER DETAILS

NOT TO SCALE




## SITE PLAN - POWER RISER

NOT TO SCALE

GRAPHIC SCALE

40' 20' 0 40' 80'

1" = 40'

1' 0 1' 2' 3' 4' 5'

1/2" = 1'-0"

E-1

HENRY VON OESEN AND ASSOCIATES
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WILMINGTON, NORTH CAROLINA

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA

DES. RDM | DR. GBH | CHK. RDM
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY: DATE 7/2/84
FIRM MEMBER — PRINCIPAL
EFD FP TYPIC. RVD. E.E.W.
HD EM DIR KD
APPROVED: DATE 7/5/84
ACTIVITY - SATISFACTORY TO
APPROVED: DATE
FOR EFD FOR COMMANDER NAVFAC

CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

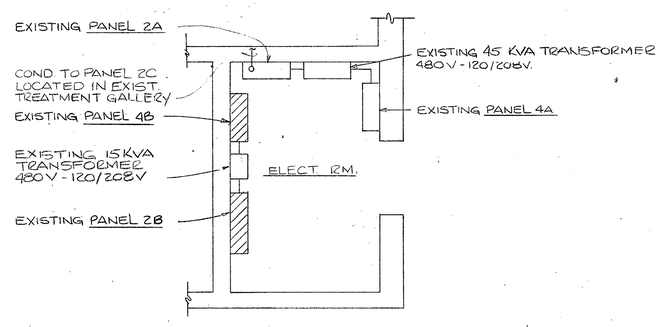
ELECTRICAL SITE PLAN

SIZE F | CODE IDENT. NO. 80091 | NAVFAC DRAWING NO. 4107598
CONSTR. CONTR. NO. N62470-81-B-1644
SCALE AS SHOWN | SPEC. 05-81-1644 | SHEET 65 OF 74
EFD Dwg. No.

NORTH CAROLINA SEAL 8433 PROFESSIONAL ENGINEER

2 July 84

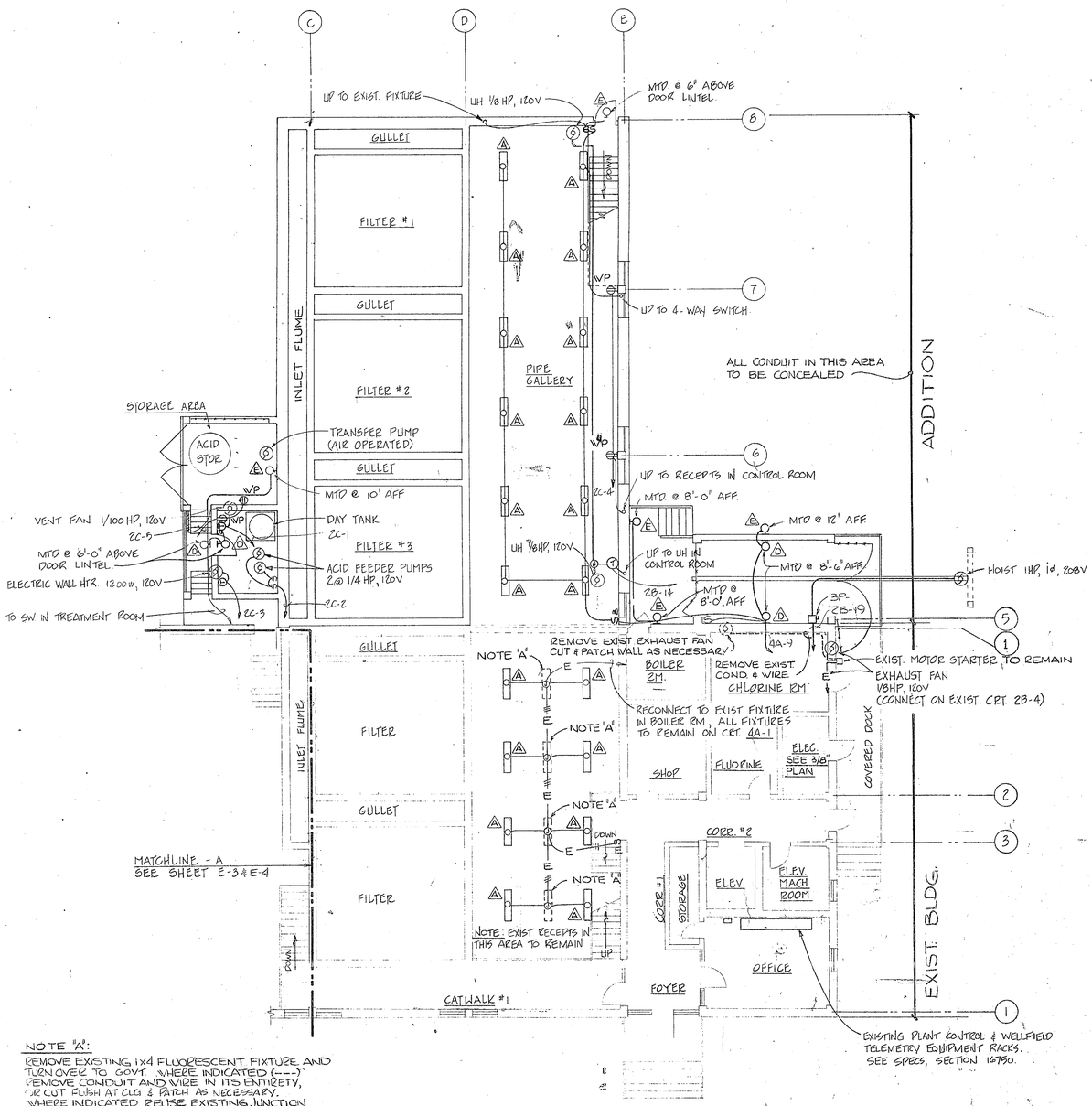
| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROV'L |
| | | | |
| | | | |




## EXISTING ELECTRIC ROOM

SCALE: 3/8"=1'-0"

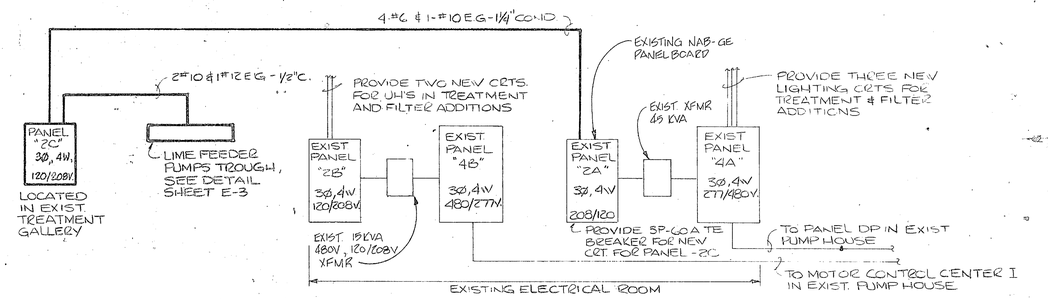
NOTE: SEE SH. E-4 FOR PANEL SCHEDULES 4A, 2A & 2B.




NOTE "A":
REMOVE EXISTING 1x4 FLUORESCENT FIXTURE AND TURN OVER TO GOVT. WHERE INDICATED (---). REMOVE CONDUIT AND WIRE IN ITS ENTIRETY, CK CUT FLUSH AT CLG & PATCH AS NECESSARY. WHERE INDICATED REUSE EXISTING JUNCTION BOX, CONDUIT AND WIRE. CONNECT SURFACE MTD FLUORESCENT FIXTURES TYPE A WITH 2#12 & 1#12 EG - 1/2"C.

## PIPE GALLERY AND PARTIAL FIRST FLOOR PLAN - BUILDING 670

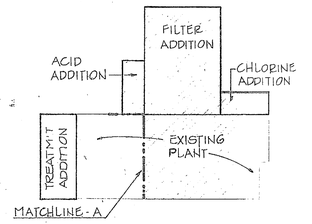
SCALE: 1/8"=1'-0"




## POWER RISER

NOT TO SCALE

NOTE: ALL EXISTING PANELBOARD, TRANSFORMERS, CONDUIT & WIRE TO REMAIN UNLESS OTHERWISE INDICATED ON DRAWINGS, SCHEDULES AND RISER.




## KEY PLAN

GRAPHIC SCALES
4' 0 4' 8' 12' 16' 20'
1/8"=1'-0"
1' 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

NORTH CAROLINA PROFESSIONAL SEAL 3433 ENGINEER R. DUNCAN MCFADDEN

E-2

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA

DES. RDM | DR GBH, SMC | CHK RDM
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SUBMITTED BY — DATE
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APPROVED — DATE
FOR EFD FOR COMMANDER NAVFAC

CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

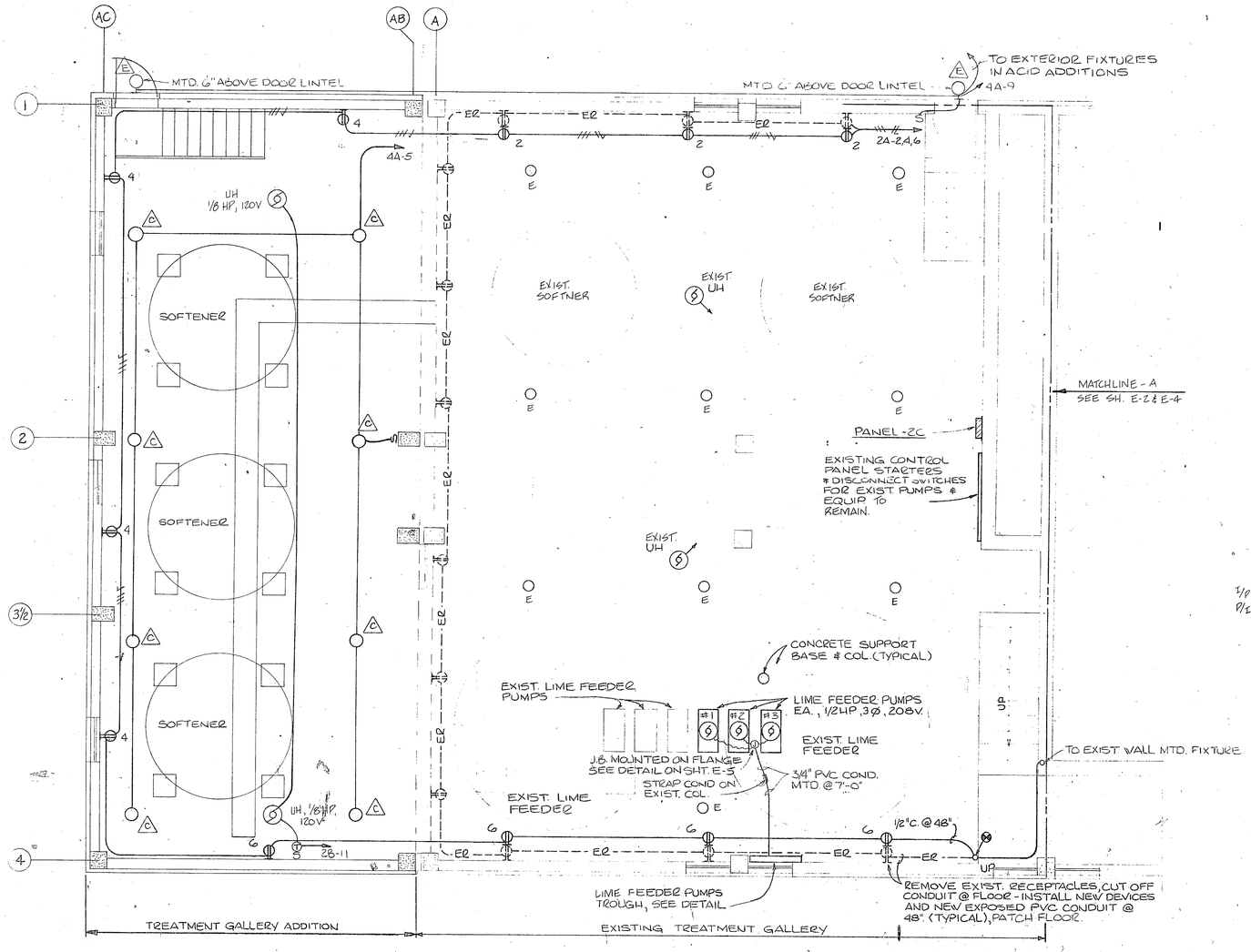
ELECTRICAL PIPE GALLERY

| SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 4107599 |
| | | CONSTR. CONTR. NO. N62470-81-B-1644 |

SCALE AS SHOWN | SPEC. 05-81-1644 | SHEET 66 OF 74

EFD DWG

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |



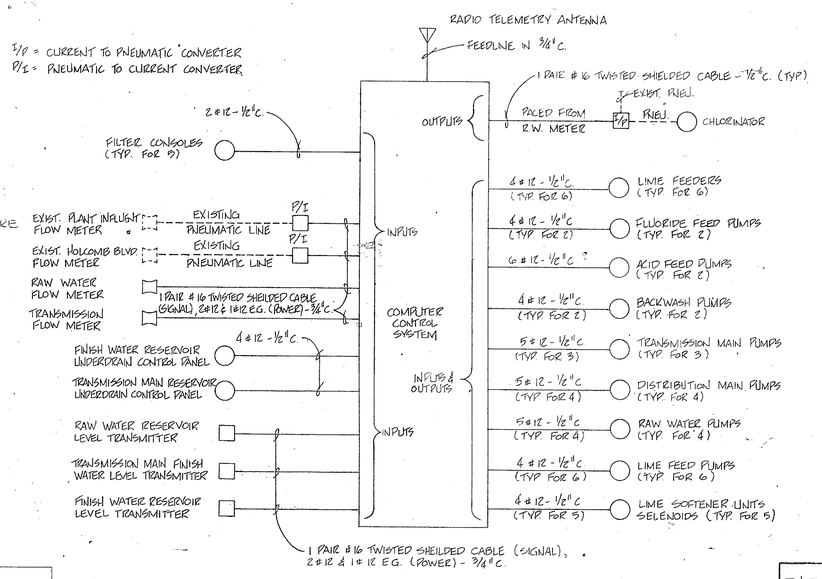

## TREATMENT ADDITION - BUILDING 670

SCALE: 1/4" = 1'-0"

NOTE: ALL RECEPTACLES SHALL BE WEATHERPROOF & INSTALLED 48" A.F.F.

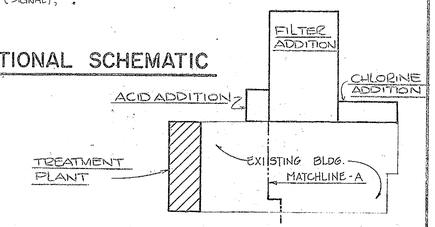
## ELECTRICAL LEGEND

| SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION |
|---|---|---|---|
| | CEILING OUTLET WITH FLUORESCENT LIGHTING FIXTURE | | CONDUIT EXPOSED |
| | FLUORESCENT LIGHTING FIXTURE, REMOVE. CEILING OUTLET TO REMAIN AS JUNCTION BOX. INSTALL AS BLANK | | CONDUIT TURNED DOWN |
| | CEILING OUTLET WITH PENDANT MOUNTED H.I.D. LIGHTING FIXTURE | | CONDUIT TURNED UP |
| | WALL MOUNTED INCANDESCENT OR H.I.D. LIGHTING FIXTURE | —E— | EXISTING CONDUIT TO REMAIN |
| | 20A, 120VAC DUPLEX GROUNDING RECEPTACLE INSTALLED AT 18" AFF, UNO. | | HOMERUN TO PANEL AND CIRCUIT BREAKER NO., ARROWS INDICATE NO. OF CIRCUITS. |
| WP | 20A, 120VAC DUPLEX GROUNDING RECEPTACLE, WEATHERPROOF. INSTALL AT 18" AFF, UNO. | | DENOTES EXISTING WORK CONNECTED TO NEW WORK |
| E | EXISTING RECEPTACLE, REMOVE. | | FLEXIBLE CONDUIT |
| | COMBINATION STARTER AND DISCONNECT SWITCH | T | THERMOSTAT - MOUNTED @ 48" A.F.F. |
| | DISCONNECT SWITCH | SE | EXISTING SWITCH TO REMAIN |
| | JUNCTION BOX | S | SWITCH, SINGLE POLE, 20A, INSTALLED @ 48" AFF, UNO. |
| | ELECTRIC MOTOR, ELECTRICAL CHARACTERISTICS INDICATED ON DRAWINGS | S3 | SWITCH, THREE WAY " |
| --ER-- | EXISTING CONDUIT AND WIRE, REMOVE. | S4 | SWITCH, FOUR WAY " |
| ----- | CONDUIT UNDERGROUND | SM | SWITCH, MANUAL MOTOR CONTROL " |
| | | | POWER PANEL. |
| | | | LIGHTING PANEL. |
| | | E | EXISTING LIGHT FIXTURE TO REMAIN. |




## TREATMENT PLANT CONTROLS FUNCTIONAL SCHEMATIC

NOT TO SCALE



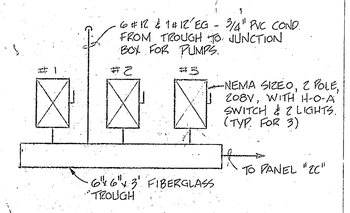

## KEY PLAN

## LIGHTING FIXTURE SCHEDULE

| STYLE & TYPE - SEE SPECS FOR NAVFAC SKETCH NO. | NUMBER & TYPE OF LAMPS | VOLTS | MOUNTING | REMARKS |
|---|---|---|---|---|
| NL-8 | 2-F34 T12 CW/RS | 277 | CEILING SURFACE | DAMP LOCATION, ENERGY SAVING BALLAST |
| NL-45, TYPE A | 1-100W | 277 | WALL-HT AS INDICATED ON DWGS | DAMP LOCATION |
| NL-22, TYPE B | 1-400 W METAL HALIDE | 277 | CEILING-PENDANT | PROVIDE POWER HOOK HANGER |
| NL-47, TYPE C | 1-35W H.P.S. | 277 | WALL-HT AS INDICATED ON DWGS. | WET LOCATION |
| NL-47, TYPE C | 1-50W H.P.S. | 277 | WALL-HT AS INDICATED ON DWGS. | WET LOCATION |
| NL-47, TYPE C | 1-35W H.P.S. | 120 | WALL-HT AS INDICATED ON DWGS. | WET LOCATION |

## ABBREVIATIONS

| | | | |
|---|---|---|---|
| AFF | ABOVE FINISHED FLOOR | KVA | KILO VOLT AMPERE |
| A | AMPERES | MIN. | MINIMUM |
| COND. OR C. | CONDUIT | MTD. | MOUNTED |
| CLG. | CEILING | N | NEUTRAL |
| CRT. | CIRCUIT | N.F. | NON-FUSIBLE |
| CORR. | CORRIDOR | RECEPT. | RECEPTACLE |
| DN. | DOWN | SW. | SWITCH |
| DISC. SW. | DISCONNECT SWITCH | S/O | SPACE ONLY |
| E.G. | EQUIPMENT GROUND | SECT. | SECTION |
| E. OR EXIST. | EXISTING | WP | WEATHER PROOF |
| EL | ELEVATION | UH | UNIT HEATER |
| ELEC. | ELECTRICAL | PVC | POLYVINYLCHLORIDE |
| F | FUSIBLE | V | VOLT |
| HOA | HAND OFF AUTOMATIC | Ø | PHASE |
| HP | HORSE POWER | UG | UNDERGROUND |
| H.P.S. | HIGH PRESSURE SODIUM | W | WATTS |
| | | XFMR | TRANSFORMER |




## CONTROLS FOR LIME FEEDER PUMPS

NOT TO SCALE

GRAPHIC SCALE

2' 0 2' 4' 6' 8' 10'

1/4" = 1'-0"

NORTH CAROLINA PROFESSIONAL SEAL 3433 ENGINEER R. DUNCAN MACPHERSON

E-3

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

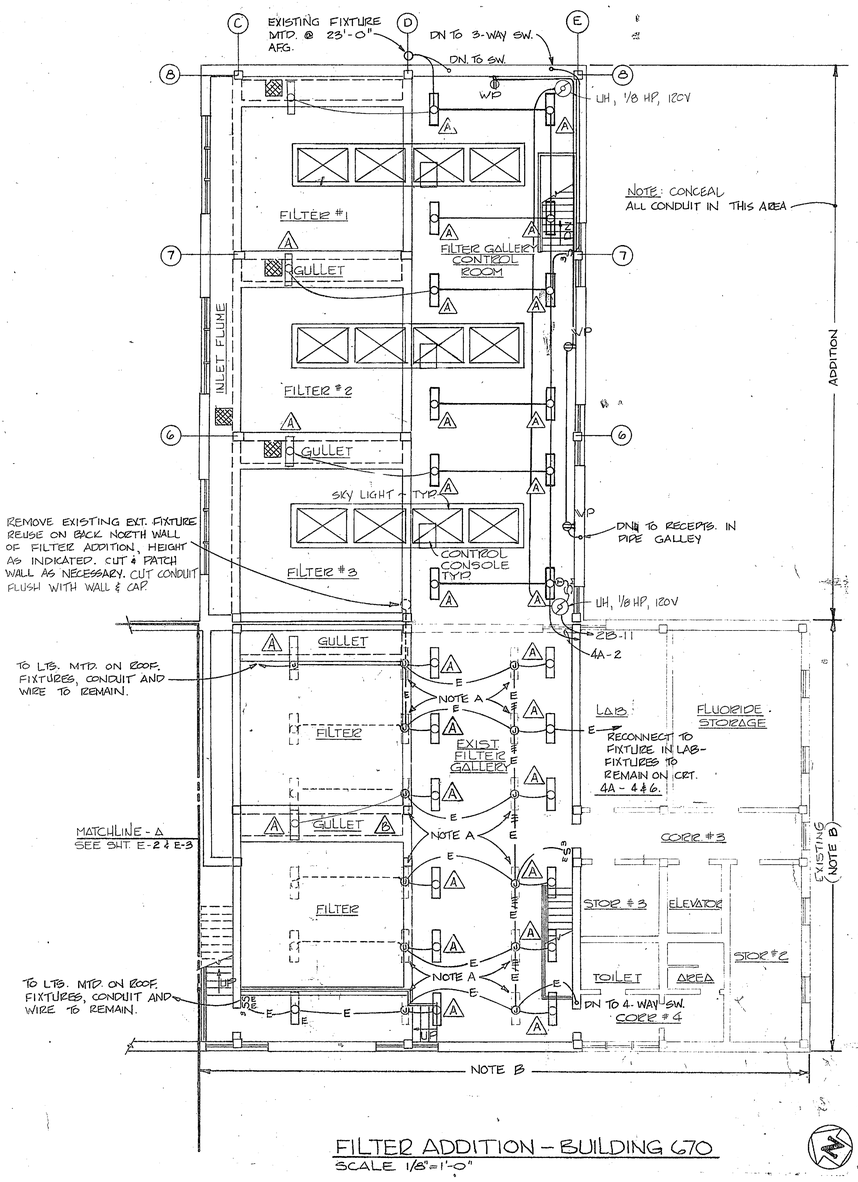
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VIRGINIA

DES RDM DR SMC CHK RDM
PROJ MGR JRB CH ENGR JRB
SUBMITTED BY DATE 7/2/84
FIRM MEMBER PRINCIPAL
EFD PP DIV RVD
HD DIR
APPROVED DATE 7/9/84
ACTIVITY - SATISFACTORY TO
APPROVED DATE
FOR EFD FOR COMMANDER NAVFAC

CAMP LEJEUNE NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
ELECTRICAL TREATMENT ADDITION

SIZE F | CODE IDENT. NO 80091 | NAVFAC DRAWING NO 4107600
CONSTR. CONTR. NO N62470-81-B-1644
SCALE AS SHOWN | SPEC. 05-81-1644 | SHEET 67 OF 74

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |




## FILTER ADDITION – BUILDING 670

SCALE 1/8"=1'-0"

## EXISTING PANEL-2A

3 PHASE, 4 WIRE, 120/208 VOLTS, 225 AMPERE BUS, 225 AMPERE MAIN CRT. BRK., 100 % NEUTRAL

| DESIGNATION TO BE TYPED IN PANEL CIRCUIT DIRECTORY | PHASE LOADING A | B | C | CKT. BKR. TRIP | AIC | CKT. NO. | ABC | CKT. NO. | AIC | CKT. BKR. TRIP | PHASE LOADING A | B | C | DESIGNATION TO BE TYPED IN PANEL CIRCUIT DIRECTORY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EXIST. RECPTS. | – | | | – | – | 1 | | 2 | – | – | – | | | EXIST. RECEPTS. |
| " " | | – | | – | – | 3 | | 4 | – | – | | – | | " " |
| " " | | | – | – | – | 5 | | 6 | – | – | | | – | " " |
| SPARE | – | | | – | – | 7 | | 8 | 10K | 3/60* | 12.6A | | | PANEL - 2C - |
| EXIST. RECPT. | | – | | – | – | 9 | | 10 | – | – | | 9.4A | | |
| " " | | | – | – | – | 11 | | 12 | – | – | | | 11A | |
| SPARE | – | | | – | – | 13 | | 14 | – | – | – | | | HEATER |
| EXIST CONTROL PANEL | | – | | – | – | 15 | | 16 | – | – | | – | | EXIST. FLUORIDE MIX PUMPS |
| | | | – | | | | | | | | | | – | |
| EXIST. LIME FEEDER PUMPS | – | | | – | – | 17 | | 18 | – | – | – | | | EXIST. LIME FEED PUMPS |
| | | – | | | | | | | | | | – | | |
| EXIST. FLUORIDE MIXER | | | – | – | – | 19 | | 20 | – | | | | – | EXIST. CHEM. SOL. MIXER |
| | – | | | | | | | | | | – | | | |
| EXIST. CHEM. SOL. MIXER | | – | | – | – | 21 | | 22 | – | – | | – | | EXIST. CHEM. SOL. MIXER |
| | | | – | | | | | | | | | | – | |
| EXIST. DUST COLLECTOR | – | | | – | – | 23 | | 24 | – | – | – | | | EXIST. FLUORIDE HOPPER |
| | | – | | | | | | | | | | – | | |
| EXIST A/C | | | – | – | – | 25 | | 26 | – | – | | | – | EXIST. A/C |
| | – | | | | | | | | | | – | | | |
| EXIST. ELEC. WATER HEATER | | – | | – | – | 27 | | 28 | – | – | | – | | S/O |
| | | | – | | | | | | | | | | – | |
| | – | – | – | SUB TOTAL "A" | | | | SUB-TOTAL "B" | | | 12.6 | 9.4 | 11 | |
| | | | | | | | | SUB-TOTAL "A" | | | – | – | – | |
| | | | | | | | NEW ADDED LOAD | GRAND TOTAL | | | 12.6 | 9.4 | 11 | AMPERES |
| | | | | | | | | LINE CURRENT | | | 12.6 | 9.4 | 11 | AMPERES |

* 2P- 60A TE BREAKER FOR NAB - GE PANEL

## PANEL 2C

3 PHASE, 4 WIRE, 120/208 VOLTS, 100 AMPERE BUS, 50 AMPERE MAIN CRT BRK *, 100 % NEUTRAL, SURFACE MOUNTING, NEMA - 4X ENCLOSURE, EQUIPMENT GROUND BUS, INTEGRATED EQUIPMENT RATING OF 10,000 RMS SYMMETRICAL AMPERES MINIMUM

* CLASS 12b

| DESIGNATION TO BE TYPED IN PANEL CIRCUIT DIRECTORY | PHASE LOADING A | B | C | CKT. BKR. TRIP | AIC | CKT. NO. | ABC | CKT. NO. | AIC | CKT. BKR. TRIP | PHASE LOADING A | B | C | DESIGNATION TO BE TYPED IN PANEL CIRCUIT DIRECTORY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VENT FAN | .8 | | | 1/20 | 10K | 1 | | 2 | 10K | 1/20 | 11.6 | | | ACID FEED PUMPS 2@1/4HP |
| ELECTRIC WALL HTR. | | 10.0 | | | | 3 | | 4 | | | | 2.2 | | RECPTS. - FILTER ADD. |
| RECPTS. - ACID ROOM | | | 3.0 | | | 5 | | 6 | | | | | – | SPARE |
| SPARE | – | | | | | 7 | | 8 | – | | – | | | SPARE |
| SPARE | | – | | | | 9 | | 10 | | | | – | | SPARE |
| LIME FEED PUMP @ 1/2HP. | | | 2.3 | 3/20 | 10K | 11 | | 12 | 10K | 3/20 | | | 2.3 | LIME FEED PUMP @ 1/2HP |
| | 2.3 | | | | | | | | | | 2.3 | | | |
| | | 2.3 | | | | | | | | | | 2.3 | | |
| | | | – | | | | | 14 | 10K | 3/20 | | | | LIME FEED PUMP @ 1/4HP |
| | – | | | | | | | | | | | 2.3 | | |
| | | – | | | | | | | | | | | 2.3 | |
| | | | – | | | | | | | | | | – | S/O |
| NAMEPLATE ENGRAVING: PANEL 2C 3Ø - 4W 120/208V | 3.5 | 10.0 | 5.7 | SUB-TOTAL 'A' | | | | SUB-TOTAL 'B' | | | 14.3 | 4.9 | 5.4 | |
| | | | | | | | | SUB-TOTAL 'A' | | | 3.5 | 10.0 | 5.7 | |
| | | | | | | | | GRAND TOTAL | | | 17.8 | 14.9 | 11.1 | AMPERES |
| | | | | | | | | LINE CURRENT | | | 17.8 | 14.9 | 11.1 | AMPERES |

## EXISTING PANEL - 2B

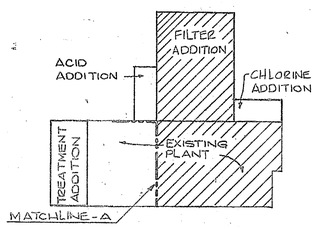
3 PHASE, 4 WIRE, 120/208 VOLTS, 50 AMPERE BUS 50 AMPERE MAIN CRT. BRK., 100 % NEUTRAL

| DESIGNATION TO BE TYPED IN PANEL CIRCUIT DIRECTORY | PHASE LOADING A | B | C | CKT. BKR. TRIP | AIC | CKT. NO. | ABC | CKT. NO. | AIC | CKT. BKR. TRIP | PHASE LOADING A | B | C | DESIGNATION TO BE TYPED IN PANEL CIRCUIT DIRECTORY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EXIST. - TREATMENT PLANT UH's | – | | | – | – | 1 | | 2 | – | – | – | | | EXIST. UH's - PIPE GALLERY |
| " - BOILER RM PUMP | | – | | – | – | 3 | | 4 | – | – | | – | | EXIST. EXH. FAN - CHLOR. ROOM |
| " - FLUN. CIRC. FAN | | | – | – | – | 5 | | 6 | – | – | | | – | EXIST. UH. - CHLOR. ROOM |
| " - PRV - 2 & 3 | – | | | – | – | 7 | | 8 | – | – | – | | | EXIST. PRV - 4,5,6,7 |
| " - PRV - 8, 9 & 10 | | – | | – | – | 9 | | 10 | – | – | | – | | EXIST. UH. - FILTER GALLERY |
| UH's 2@1/8 HP. TREAT. GALLERY | | | 1.2 | 1/20 | 10K | 11 | | 12 | – | – | | | – | EXIST. EWC |
| | – | | | | | 13 | | 14 | 10K | 1/20 | 2.2 | | | UH's - FILTER ADD. 4@1/8 HP |
| SPARE | | – | | 1/20 | 10K | 15 | | 16 | 10K | 1/20 | | – | | SPARE |
| | | | – | 1/20 | 10K | 17 | | 18 | 10K | 1/20 | | | – | SPARE |
| HOIST - 1 HP. | 1.7 | | | | | | | 20 | 10K | 1/20 | – | | | SPARE |
| | | 1.7 | | 3/30 | 10K | 19 | | 22 | | | | – | | EXIST PRV-1 |
| | | | 1.7 | | | | | | | | | | – | |
| | 1.7 | 1.7 | 2.9 | SUB-TOTAL 'A' | | | | SUB-TOTAL "B" | | | 2.2 | | | |
| | | | | | | | | SUB-TOTAL "A" | | | 1.7 | 1.7 | 2.9 | |
| | | | | | | | NEW ADDED LOADS | GRAND TOTAL | | | 3.9 | 1.7 | 2.9 | AMPERES |
| | | | | | | | | LINE CURRENT | | | 3.9 | 1.7 | 2.9 | AMPERES |

## EXISTING PANEL-4A

3 PHASE, 4 WIRE, 480/277 VOLTS, 100 AMPERE BUS, 100 AMPERE MAIN LUGS ONLY, 100 % NEUTRAL

| DESIGNATION TO BE TYPED IN PANEL CIRCUIT DIRECTORY | PHASE LOADING A | B | C | CKT. BKR. TRIP | AIC | CKT. NO. | ABC | CKT. NO. | AIC | CKT. BKR. TRIP | PHASE LOADING A | B | C | DESIGNATION TO BE TYPED IN PANEL CIRCUIT DIRECTORY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EXIST. LTG. - 1ST FLOOR | – | | | – | – | 1 | | 2 | 10K | 1/20 | 3.54 | | | LTG. - FILTER ADD. 2ND |
| EXIST. LTG. - TREATMENT | | – | | – | – | 3 | | 4 | – | – | | – | | EXIST. LTG. - 2ND FLOOR |
| LTG. - TREATMENT ADD. | | | 11.5 | 1/20 | 10K | 5 | | 6 | – | – | | | – | EXIST. LTG. - 2ND FLOOR |
| EXIST. PANEL 2A | – | | | | | | | | | | | – | | SPARE |
| | | – | | – | – | 7 | | 8 | – | – | | – | | |
| | | | – | | | | | | | | | | – | |
| LTG. 1ST FLOOR ADDITIONS | 5.9 | | | 1/20 | 10K | 9 | | 10 | 10K | 1/20 | – | | | SPARE |
| SPARE | | – | | 1/20 | 10K | 11 | | 12 | – | – | | – | | S/O |
| SPARE | | | – | 1/20 | 10K | 13 | | 14 | | | | | – | S/O |
| | 5.9 | – | 11.5 | SUBTOTAL "A" | | | | SUBTOTAL "B" | | | 5.4 | – | | |
| | | | | | | | NEW ADDED LOADS | SUBTOTAL "A" | | | 5.9 | – | 11.5 | |
| | | | | | | | | GRAND TOTAL | | | 11.3 | – | 11.5 | AMPERES |
| | | | | | | | | LINE CURRENT | | | 11.3 | – | 11.5 | AMPERES |




KEY PLAN

NOTES:

A - REMOVE EXISTING 1x4 FLUORESCENT FIXTURE AND TURN OVER TO OWNER. WHERE INDICATED (- - -) REMOVE CONDUIT AND WIRE IN ITS ENTIRETY, OR CUT AT CLG. AND PATCH AS NECESSARY. WHERE INDICATED REUSE EXISTING JUNCTION BOX, COND & WIRE. CONNECT SURFACE MOUNTED FLUORESCENT FIXTURES TYPE A WITH 1/2" EXPOSED PVC CONDUIT & 2 #12 AWG & 1 #12 E.G.

B. ALL ELECTRICAL EQUIPMENT, RECEPTACLES, UH'S, VENT FANS, ETC. IN THIS AREA TO REMAIN.

GRAPHIC SCALE

4' 0 4' 8' 12' 16' 20'

1/8"=1'-0"

NORTH CAROLINA PROFESSIONAL SEAL 8433 ENGINEER

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DES. RDM | DR SMC | CHK RDM
PROJ. MGR JRB CH. ENGR JRB
SUBMITTED JR DATE 7/2/84
FIRM MEMBER PRINCIPAL
EFD FP 20001 RVD 6-25-84
HD 310 DIR KC
APPROVED DATE 7/4/84
ACTIVITY - SATISFACTORY TO
APPROVED DATE
FOR EFD FOR COMMANDER, NAVFAC

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VIRGINIA
CAMP LEJEUNE NORTH CAROLINA

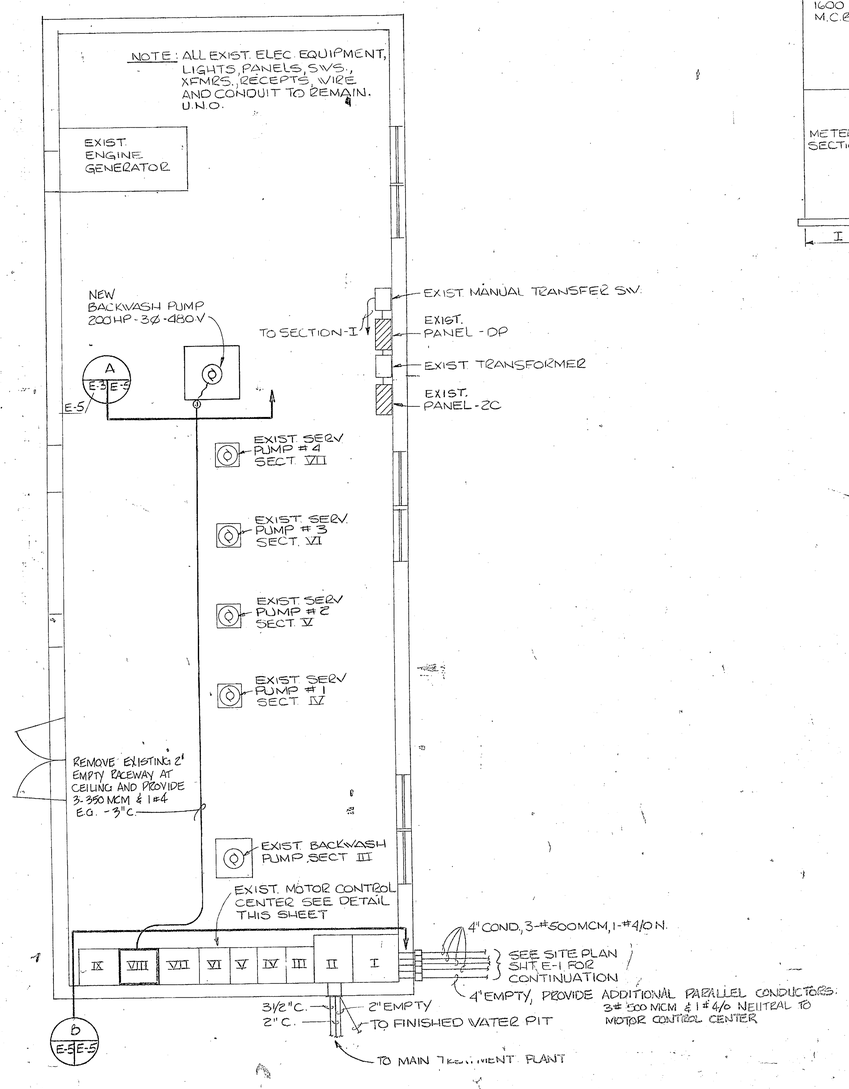
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

ELECTRICAL FILTER GALLERY

| SIZE | CODE IDENT NO | NAVFAC DRAWING NO |
|---|---|---|
| F | 80091 | 4107601 |
| | | CONSTR. CONTR NO N62470-81-B-1644 |

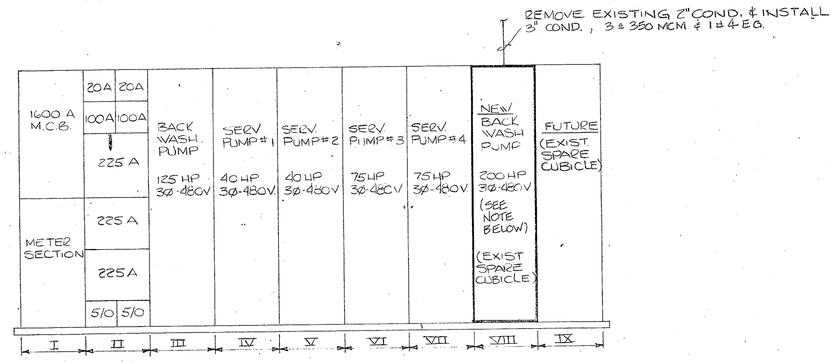
SCALE AS SHOWN | SPEC 05-81-1644 | SHEET 68 OF 74

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |




## EXISTING PUMP HOUSE - BLDG. 671

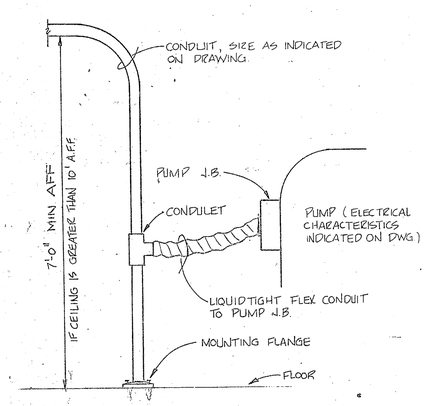
SCALE 1/4" = 1'-0"




## EXISTING MOTOR CONTROL CENTER

B / E-5 E-5 NOT TO SCALE

SECTION VIII : PROVIDE COMBINATION FUSED SWITCH AND REDUCED VOLTAGE AUTO-TRANSFORMER, MAGNETIC STARTER, HAND-OFF-AUTOMATIC SWITCH, RED & GREEN SIGNAL LIGHTS AND CONTROL VOLTAGE TRANSFORMER.




## CONDUIT CONNECTION AT PUMP (TYPICAL)

A / E-3 E-5 — E-5

OVERHEAD FEEDERS ONLY
NOT TO SCALE

GRAPHIC SCALES
2' 0 2' 4' 6' 8' 10'
1/4" = 1'-0"

NORTH CAROLINA SEAL 8433 PROFESSIONAL ENGINEER DUNCAN MACKENZIE

E-5

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA
CAMP LEJEUNE — NORTH CAROLINA

DES. RDM DR GBH CHK RDM
PROJ. MGR. JRB CH. ENGR. JRB
SUBMITTED BY — DATE 7/12/84
FIRM MEMBER — PRINCIPAL
EFD FP 40% RVD
HD — DIR
APPROVED — DATE 7/17/84
ACTIVITY - SATISFACTORY TO
APPROVED — DATE
FOR EFD FOR COMMANDER NAVFAC

EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

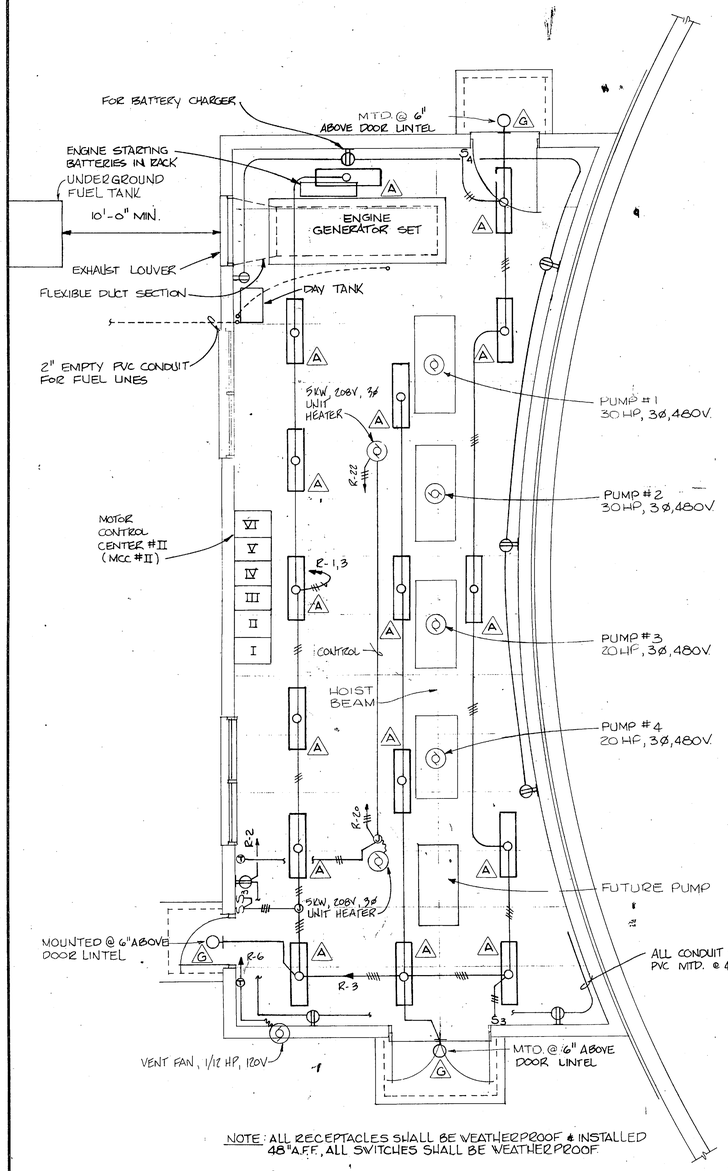
ELECTRICAL EXISTING PUMP HOUSE

SIZE F — CODE IDENT NO 80091 — NAVFAC DRAWING NO 4107602
CONSTR CONTR NO N62470-81-B-1644
SCALE AS SHOWN — SPEC 05-81-1644 — SHEET 69 OF 74

E-5

EFD DWG NO

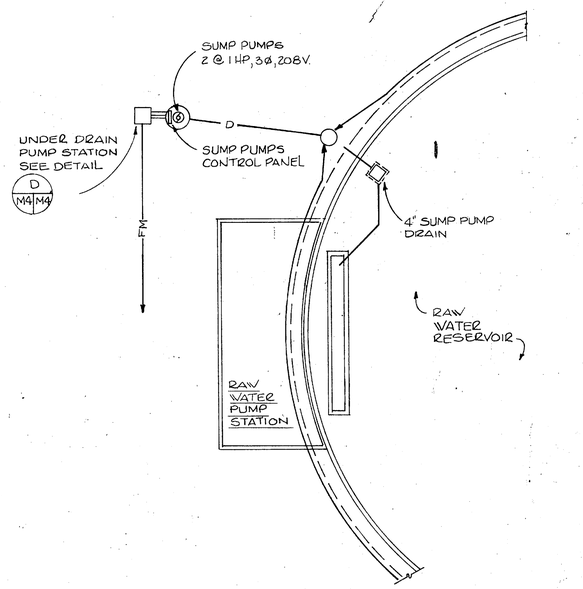
| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |




NOTE: ALL RECEPTACLES SHALL BE WEATHERPROOF & INSTALLED 48" A.F.F., ALL SWITCHES SHALL BE WEATHERPROOF

## PUMP HOUSE FLOOR PLAN - RAW WATER RESERVOIR

SCALE 1/4" = 1'-0"



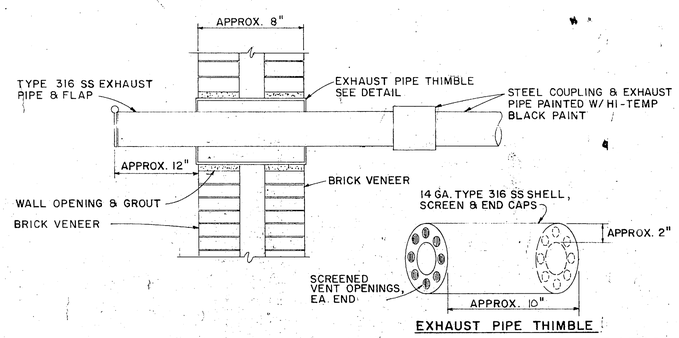

## LOCATION PLAN OF UNDER DRAIN PUMP STATION ~ RAW WATER RESERVOIR

SCALE: 1/16" = 1'-0"

## PANEL R

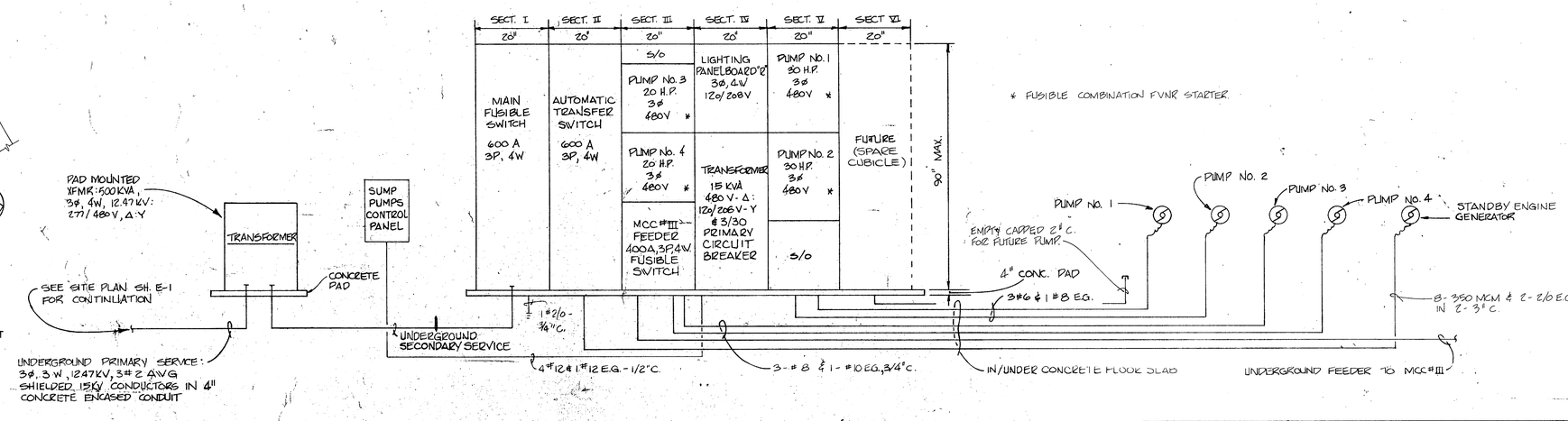
3 PHASE, 4 WIRE, 120/208 VOLTS, 100 AMPERE BUS, 100 AMPERE MAIN CKT. BKR, 100 % NEUTRAL, SURFACE MOUNTING, NEMA-1 ENCLOSURE, EQUIPMENT GROUND BUS, INTEGRATED EQUIPMENT RATING OF 10,000 RMS SYMMETRICAL AMPERES MINIMUM

| DESIGNATION TO BE TYPED IN PANEL CIRCUIT DIRECTORY | PHASE LOADING A | B | C | CKT. BKR TRIP | AIC | CKT. NO. | ABC | CKT. NO. | AIC | CKT. BKR TRIP | PHASE LOADING A | B | C | DESIGNATION TO BE TYPED IN PANEL CIRCUIT DIRECTORY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LIGHTING | 750 | | | 1/20 | 10 K | 1 | | 2 | 10 K | 1/20 | 1260 | | | RECEPTS. |
| LIGHTING | | 1000 | | | | 3 | | 4 | | | | - | | SPARE |
| SPARE | | | - | | | 5 | | 6 | | | | | 100 | VENT FAN 1/12 H.P. |
| " | - | | | | | 7 | | 8 | | | - | | | S/O |
| " | | - | | | | 9 | | 10 | | | | - | | " |
| S/O | | | - | | | 11 | | 12 | | | | | - | " |
| " | - | | | | | 13 | | 14 | | | - | | | " |
| " | | - | | | | 15 | | 16 | | | | | | " |
| " | | | - | | | 17 | | 18 | | | | | | " |
| " | - | | | | | | | | | | | | | " |
| " | | | | 3/20 | | 19 | | 20 | | 3/20 | | 1667 | | UNIT HEATER |
| " | | | | | | | | | | | | | 1667 | |
| | 675 | | | | | | | | | | 1667 | | | |
| SUMP PUMP CONTROL PANEL | | 475 | | 3/20 | | 21 | | 22 | | 3/20 | | 1667 | | UNIT HEATER |
| | | | 475 | | | | | | | | | | 1667 | |
| NAMEPLATE ENGRAVING: PANEL R 3ø-4W 120/208V | 1225 | 1475 | 475 | SUB-TOTAL "A" | | | | SUB-TOTAL "B" | | | 4594 | 3334 | 3634 | |
| | | | | | | | | SUB-TOTAL "A" | | | 1225 | 1475 | 475 | |
| | | | | | | | | GRAND TOTAL | | | 5819 | 4809 | 3909 | VOLT-AMPERES |
| | | | | | | | | LINE CURRENT | | | 48 | 40 | 33 | AMPERES |




## GENERATOR EXHAUST PIPE - EXTERIOR WALL PENETRATION

NO SCALE




## MOTOR CONTROL CENTER #II (MCC #II) ELEVATION AND RAW WATER RESERVOIR POWER RISER DIAGRAM

NOT TO SCALE

GRAPHIC SCALES

2' 0 2' 4' 6' 8' 10'
1/4" = 1'-0"
16' 8' 4' 0 16' 32'
1/16" = 1'-0"

NORTH CAROLINA PROFESSIONAL SEAL 8433 ENGINEER R. DUNCAN MCFADDEN

2 JULY 84

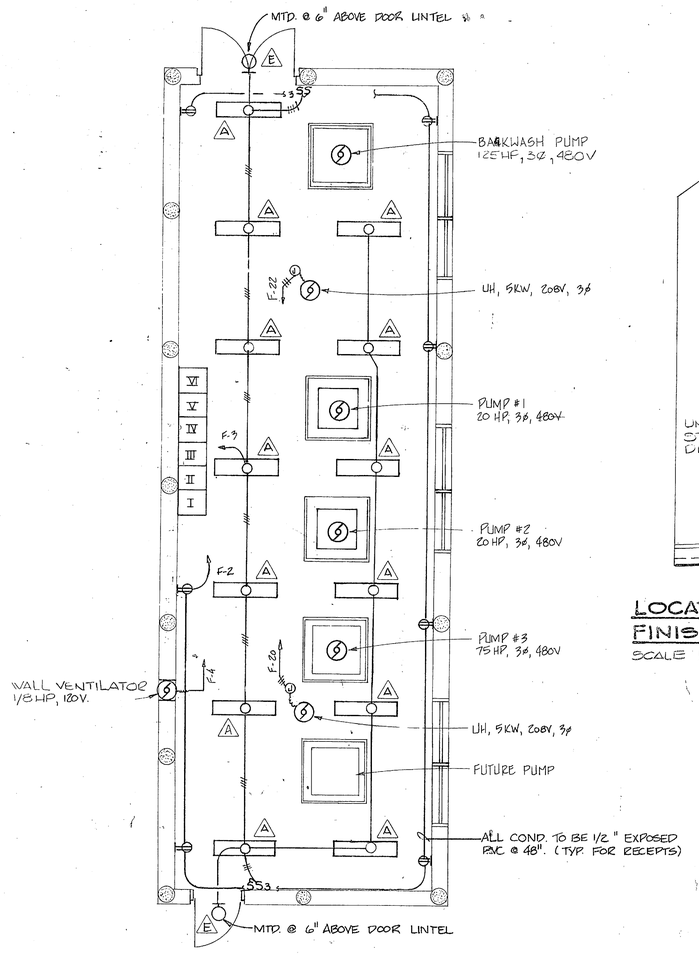
HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DES. RDM | DR. SMC, GBH | CHK. RDM
PROJ. MGR. JRB | CH. ENGR. JRB
SUBMITTED BY | DATE
FIRM MEMBER | PRINCIPAL
EFD FP | RVD
HD | DIR
APPROVED | DATE
ACTIVITY - SATISFACTORY TO | DATE
APPROVED | DATE
FOR EFD FOR COMMANDER NAVFAC

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA
CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
ELECTRICAL - RAW WATER PUMP STA.

SIZE F | CODE IDENT. NO. 80091 | NAVFAC DRAWING NO. 4107603
CONSTR. CONTR. NO. N62470-81-B-1644
SCALE AS SHOWN | SPEC. 05-81-1644 | SHEET 70 OF 74
EFD DWG NO.

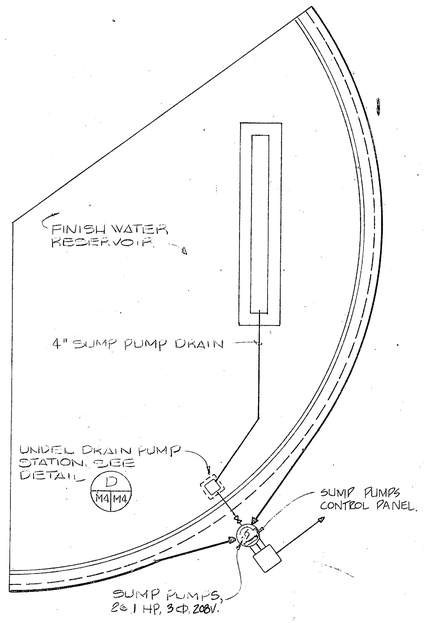
| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |
| | | | |




NOTE: ALL RECEPTACLES SHALL BE WEATHERPROOF & INSTALLED 48" AFF
ALL SWITCHES SHALL BE WEATHERPROOF

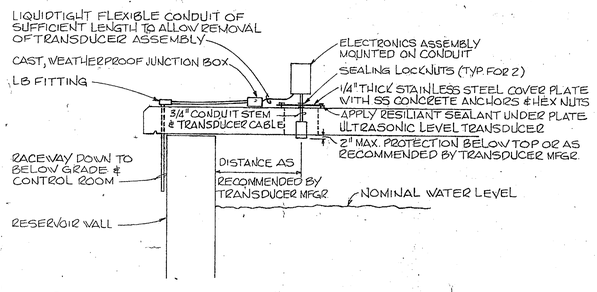
## PUMP HOUSE FLOOR PLAN - FINISH WATER RESERVOIR

SCALE: 1/4" = 1'-0"



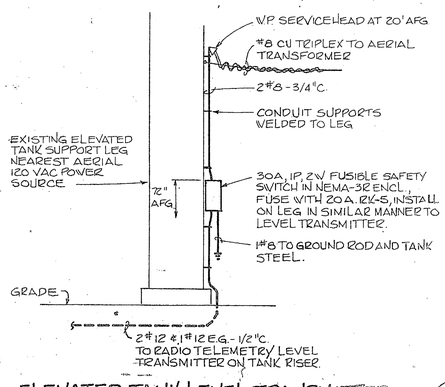

## LOCATION PLAN OF UNDER DRAIN PUMP STATION - FINISH WATER RESERVOIR

SCALE 1/16" = 1'-0"



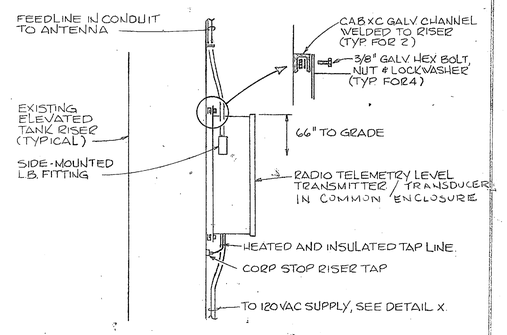

X E-7 E-7 RESERVOIR LEVEL TRANSMITTER MOUNTING DETAIL

NOT TO SCALE




Y E-7 E-7 ELEVATED TANK LEVEL TRANSMITTER POWER SUPPLY DETAIL

NOT TO SCALE

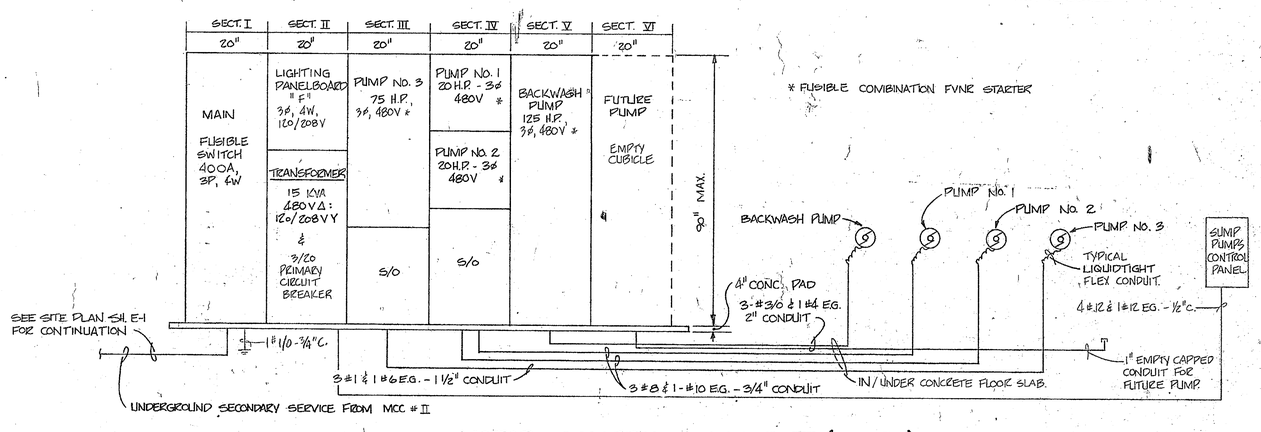



Z E-7 E-7 ELEVATED TANK LEVEL TRANSMITTER MOUNTING DETAIL

NOT TO SCALE

| PANEL F | 3 PHASE, 4 WIRE, 120/208 VOLTS, 100 AMPERE BUS, 60 AMPERE MAIN CIRT. BRK. ____, 100 % NEUTRAL, SURFACE MOUNTING, NEMA - 1 ENCLOSURE, EQUIPMENT GROUND BUS, INTEGRATED EQUIPMENT RATING OF 10,000 RMS SYMMETRICAL AMPERES MINIMUM |
|---|---|

| DESIGNATION TO BE TYPED IN PANEL CIRCUIT DIRECTORY | PHASE LOADING A | B | C | CKT. BKR. TRIP | AIC | CKT. NO. | ABC | CKT. NO. | AIC | CKT. BKR TRIP | PHASE LOADING A | B | C | DESIGNATION TO BE TYPED IN PANEL CIRCUIT DIRECTORY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPARE | | | | 1/20 | 10K | 1 | | 2 | 10K | 1/20 | 1260 | | | RECEPTACLES |
| LIGHTS | | 1400 | | | | 3 | | 4 | | | | 250 | | VENT FAN - 1/8 H.P. |
| SPARE | | | – | | | 5 | | 6 | | | | | – | S/O |
| " | – | | | | | 7 | | 8 | | | – | | | |
| " | | – | | | | 9 | | 10 | | | | – | | |
| S/O | | | – | | | 11 | | 12 | | | | | – | |
| " | – | | | | | 13 | | 14 | | | – | | | |
| " | | – | | | | 15 | | 16 | | | | – | | |
| " | | | – | | | 17 | | 18 | | | | | – | |
| | 475 | | | | | | | | | | 1667 | | | |
| SUMP PUMP CONTROL PANEL | | 475 | | 3/20 | | 19 | | 20 | | 3/20 | | 1667 | | UNIT HEATER |
| | | | 475 | | | | | | | | | | 1667 | |
| | – | | | | | | | | | | 1667 | | | |
| SPARE | | – | | 3/20 | | 21 | | 22 | | 3/20 | | 1667 | | UNIT HEATER |
| | | | – | | | | | | | | | | 1667 | |
| | 475 | 1875 | 475 | SUB-TOTAL "A" | | | | SUB-TOTAL "B" | | | 4594 | 3884 | 3334 | |
| NAMEPLATE ENGRAVING PANEL "F" 3Ø, 4 WIRE 120/208 VOLTS | | | | | | | | SUB-TOTAL "A" | | | 475 | 1875 | 475 | |
| | | | | | | | | GRAND TOTAL | | | 5069 | 5209 | 3809 | VOLT-AMPERES |
| | | | | | | | | LINE CURRENT | | | 42 | 43 | 32 | AMPERES |




## MOTOR CONTROL CENTER # III (MCC # III) ELEVATION AND FINISH WATER RESERVOIR POWER RISER DIAGRAM

NOT TO SCALE

GRAPHIC SCALES

16' 8' 4' 0 16' 32'
1/16" = 1'-0"
2' 0 5' 10'
1/4" = 1'-0"

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 8433 DUNCAN MCKEITHAN

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DES RDM DR GBH, CTJ CHK RDM
PROJ MGR JRB CH ENGR JRB
SUBMITTED BY DATE 7/2/64
FIRM MEMBER PRINCIPAL
EFD FP MGR RVD
HD DIR
APPROVED DATE 7/7/64
ACTIVITY - SATISFACTORY TO
APPROVED DATE
FOR EFD FOR COMMANDER NAVFAC

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION NORFOLK, VIRGINIA
CAMP LEJEUNE NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

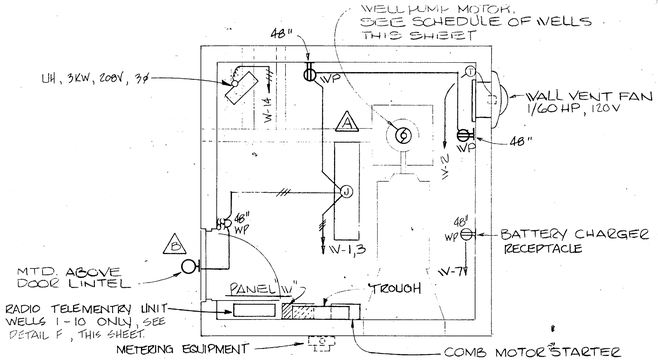
ELECTRICAL FINISH WATER PUMP STA.

| SIZE | CODE IDENT. NO | NAVFAC DRAWING NO |
|---|---|---|
| F | 80091 | 4107604 |
| | | CONSTR CONTR NO. N62470-81-B-1644 |
| SCALE AS SHOWN | SPEC 05-81-1644 | SHEET 71 OF 74 |

E-7

EFD DWG NO

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVED |
| | | | |




## WELL HOUSE PLAN, TYPICAL FOR WELLS NO.1 THRU NO.20

SCALE 3/8"=1'-0"

## PANEL W SCHEDULE

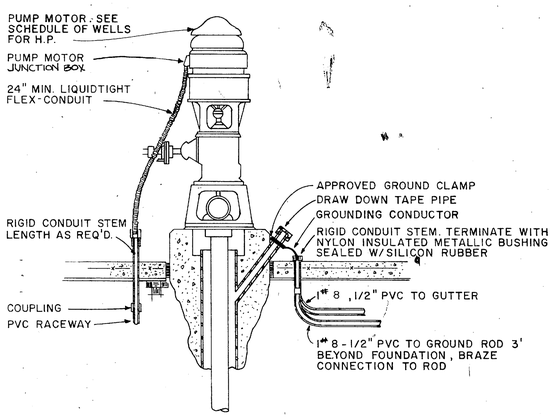
3Ø, 4 WIRE, 120/208 VOLTS, 100 AMPERE BUS, 60 AMPERE MAIN CIRCUIT BRK. 100% NEUTRAL, SURFACE MOUNTING NEMA-4X ENCLOSURE, EQUIPMENT GROUND BUS, INTEGRATED EQUIPMENT RATING OF 10,000 RMS SYMMETRICAL AMPERES MINIMUM, U.L.S.E. LABEL REQ'D, FIBERGLASS ENCLOSURE.

| DESIGNATION TO BE TYPED IN PANEL CIRCUIT DIRECTORY | PHASE LOADING A | B | C | CKT. BRK. TRIP | AIC | CKT. NO. | A B C | CKT. NO. | AIC | CKT. BRK. TRIP | PHASE LOADING A | B | C | DESIGNATION TO BE TYPED IN PANEL CIRCUIT DIRECTORY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LIGHTING | 200 | | | 1/20 | 10 K | 1 | | 2 | 10 K | 1/20 | 55 | | | VENT FAN - 1/60 H.P. |
| RECEPTACLES | | 360 | | | | 3 | | 4 | | | | 100 | | RADIO TELEMETRY UNIT |
| SPARE | | | — | | | 5 | | 6 | | | | | - | SPACE |
| BATTERY CHARGER | 100 | | | | | 7 | | 8 | | | | | | " |
| SPARE | - | | | | | 9 | | 10 | | | | | | " |
| SPARE | | | - | | | 11 | | 12 | | | | | - | " |
| SPARE | - | | | | | 13 | | | | | 1000 | | | " |
| SPACE | | | - | | | 15 | | 14 | | 3/60 | | 1000 | | UNIT HEATER |
| " | - | | | | | 17 | | | | | | | 1000 | " |
| NAMEPLATE | 300 | 360 | — | SUB TOTAL "A" | | | SUB TOTAL "B" | | | | 1055 | 1100 | 1000 | |
| PANEL W 3Ø, 4W 120/208 V. | | | | | | | SUB TOTAL "A" | | | | 300 | 360 | — | |
| | | | | | | | GRAND TOTAL | | | | 1355 | 1460 | 1000 | VOLT-AMPERES |
| | | | | | | | LINE CURRENT | | | | 11.3 | 12.2 | 8.3 | AMPERES |

## SCHEDULE OF WELLS

| WELL SITE NO. | SECONDARY SERVICE RISER COND. | WIRE | PUMP HP * | MOTOR STARTER NEMA SIZE * | PUMP FEEDER SIZE COND. | WIRE |
|---|---|---|---|---|---|---|
| 1 | 1 1/4" | 4 - #4 | 15 | 2 | 1" | 3-#6 & 1-#10 E.G. |
| 2 | | | 15 | | | |
| 3 | | | 15 | | | |
| 4 | | | 15 | | | |
| 5 | 1" | 4 - #6 | 10 | | 3/4" C | 3-#8 & 1-#10 EG |
| 6 | | | 10 | | | |
| 7 | | | 10 | | | |
| 8 | | | 10 | | | |
| 9 | | | 10 | | | |
| 10 | | | 10 | | | |
| 11 | 1 1/4" | 4-#4 | 15 | | 1" | 3-#6 & 1-#10 E.G. |
| 12 | | | 15 | | | |
| 13 | | | 15 | | | |
| 14 | | 4 - #3 | 20 | 3 | 1 1/4" | 3 - #4 & 1 - #8 E.G. |
| 15 | 1" | 4 - #6 | 10 | 2 | 3/4" | 3 - #8 & 1 - #10 EG. |
| 16 | " | " | 10 | 2 | 3/4" | " |
| 17 | 1 1/4" | 4 - #3 | 20 | 3 | 1 1/4" | 3 - #4 & 1 - #8 E.G. |
| 18 | | | 20 | 3 | 1 1/4" | " |
| 19 | | | 20 | 3 | 1 1/4" | " |
| 20 | 1" | 4 - #6 | 10 | 2 | 3/4" | 3-#8 & 1-#10 EG. |

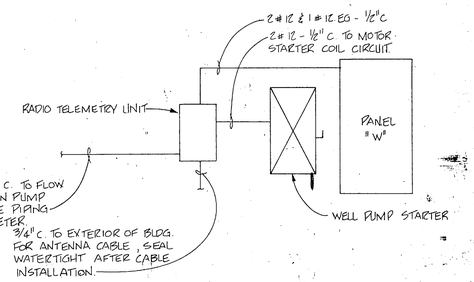
* NOTE: ALL PUMPS ARE 3Ø-208V COMBINATION STARTER & DISC. SW SHOWN CONTRACTOR MAY ELECT TO USE SEPARATE STARTER AND DISC. SW




## DETAIL - WELL CASING GROUND AND MOTOR CONNECTION

(A / E-8 | E-8)

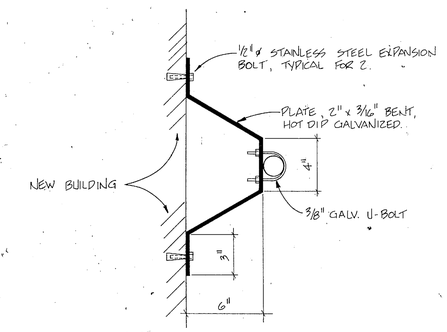
NO SCALE




## TYPICAL RADIO TELEMETRY UNIT INSTALLATION DETAIL

(F / E-8 | E-8)

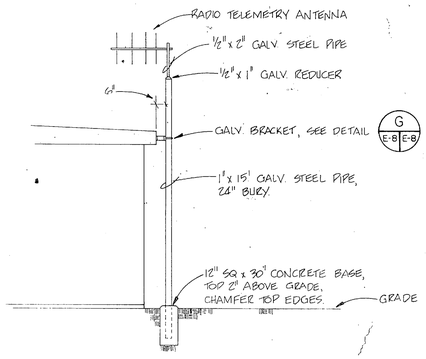
NOT TO SCALE




## MOUNTING BRACKET DETAIL

(G / E-8 | E-8)

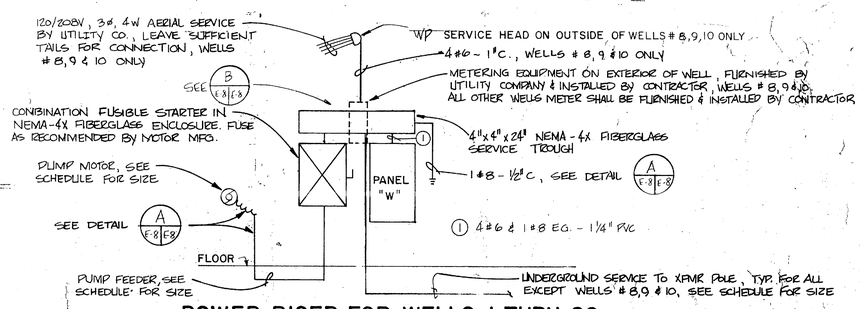
NOT TO SCALE




## TYPICAL RADIO TELEMETRY ANTENNA INSTALLATION DETAIL

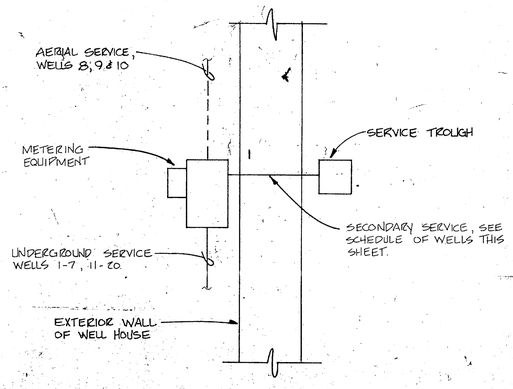
(H / E-8 | E-8)

NOT TO SCALE




## POWER RISER FOR WELLS 1 THRU 20

NO SCALE




## METERING / SERVICE TROUGH DETAIL

(B / E-8 | E-8)

NO SCALE

E-8

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA

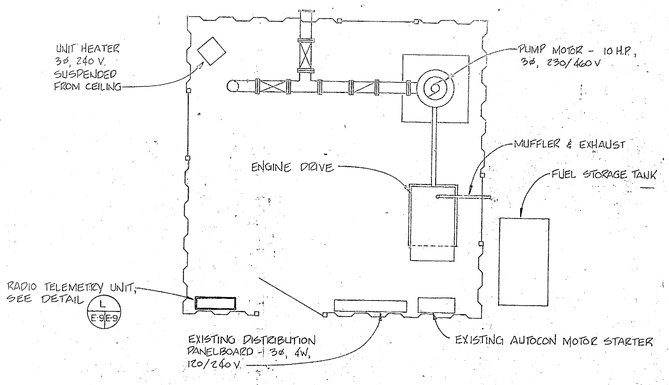
DES RDM | DR GBH,CTJ | CHK RDM
PROJ. MGR JRB | CH. ENGR JRB
SUBMITTED BY — DATE 7/2/84
FIRM MEMBER — PRINCIPAL
EFD FP — RVD
HD — DIR
APPROVED — DATE
ACTIVITY - SATISFACTORY TO
APPROVED — DATE
FOR EFD FOR COMMANDER NAVFAC

NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 3433

CAMP LEJEUNE — NORTH CAROLINA
EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT
ELECTRICAL TYPICAL WELL HOUSE

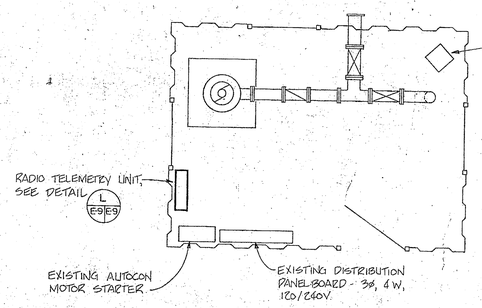
SIZE F | CODE IDENT NO 80091 | NAVFAC DRAWING NO 4107605
CONSTR CONTR NO N62470-81-B-1644
SCALE AS SHOWN | SPEC. 05-81-1644 | SHEET 72 OF 74
EFD DWG NO

| REVISIONS | | | |
|---|---|---|---|
| SYM | DESCRIPTION | DATE | APPROVD |
| | | | |
| | | | |



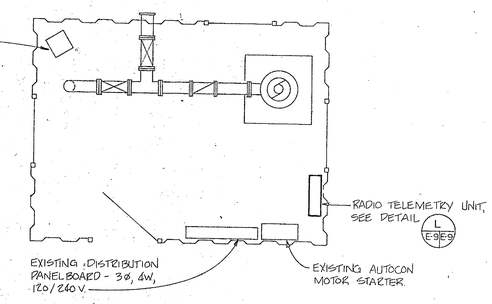

## FLOOR PLAN WELLS 643, 645, 646, 647

SCALE : 3/8" = 1'-0"



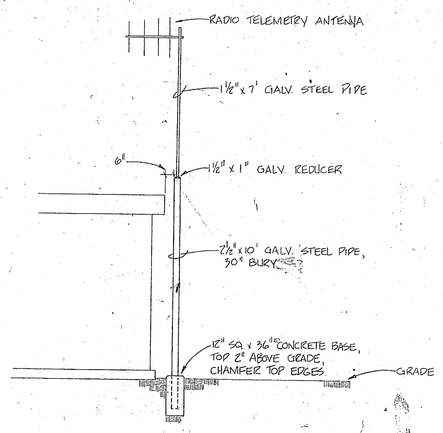

## FLOOR PLAN WELL 644

SCALE : 3/8" = 1'-0"



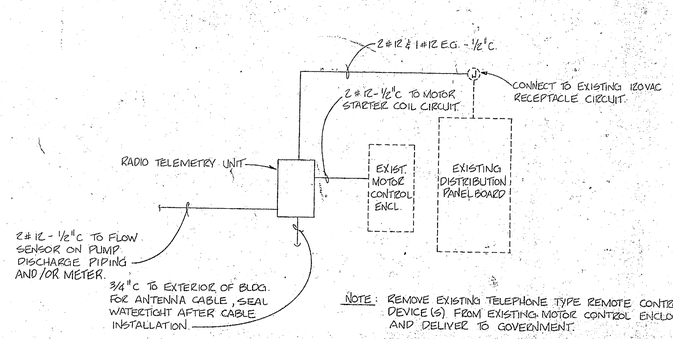

## FLOOR PLAN WELLS 648, 649

SCALE : 3/8" = 1'-0"




## TYPICAL RADIO TELEMETRY ANTENNA INSTALLATION DETAIL K E-9 E-9

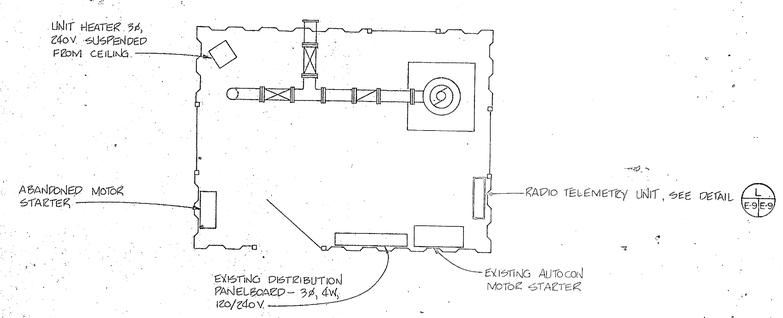
NOT TO SCALE




NOTE: REMOVE EXISTING TELEPHONE TYPE REMOTE CONTROL DEVICE(S) FROM EXISTING MOTOR CONTROL ENCLOSURE AND DELIVER TO GOVERNMENT.

## TYPICAL RADIO TELEMETRY UNIT INSTALLATION DETAIL L E-9 E-9

NOT TO SCALE




## FLOOR PLAN WELL 650

SCALE : 3/8" = 1'-0"

NORTH CAROLINA PROFESSIONAL SEAL 8433 ENGINEER R. DUNCAN MCFADDEN

2 Jul 84

HENRY VON OESEN AND ASSOCIATES
CONSULTING ENGINEERS AND PLANNERS
WILMINGTON, NORTH CAROLINA

DES RDM | DR WPJ | CHK RDM
PROJ MGR JRB | CH ENGR JRB
SUBMITTED BY | DATE 7/2/84
FIRM MEMBER | PRINCIPAL
EFD FP | RVD
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ACTIVITY - SATISFACTORY TO
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FOR EFD FOR COMMANDER NAVFAC

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA
CAMP LEJEUNE — NORTH CAROLINA

# EXPANSION OF HOLCOMB BOULEVARD WATER TREATMENT PLANT

## EXISTING WELL HOUSES

| SIZE | CODE IDENT NO. | NAVFAC DRAWING NO |
|---|---|---|
| E | 80091 | 4107606 |
| | | CONSTR CONTR NO N62470-81-B-1644 |
| SCALE AS SHOWN | SPEC 05-81-1644 | SHEET 73 OF 74 |

E-9