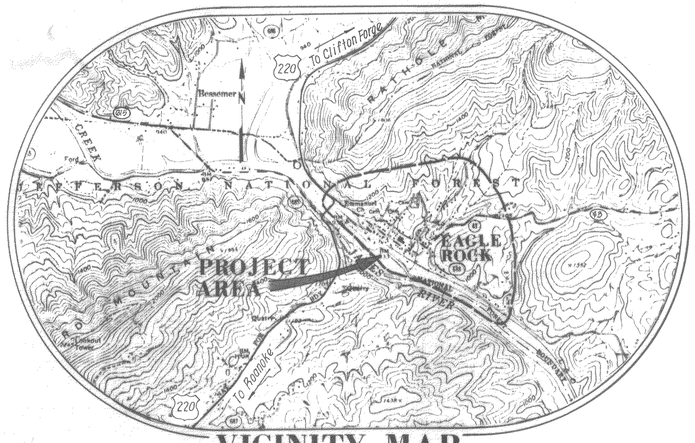
(AB) Eagle Rock Wastewater
PROJECT NAME: Collection & Treatment System
DATE: April 1991
TYPE: Sewer
LOCATION: Eagle Rock
TOTAL # SHEETS: 19
A/E FIRM: Clean Water
# OF SETS: 1

# COMMUNITY OF EAGLE ROCK




VICINITY MAP
Scale: 1" - 2000'

# WASTEWATER COLLECTION & TREATMENT SYSTEM

FOR

## BOTETOURT COUNTY BOARD OF SUPERVISORS


Clean Water Engineers, Inc.
7 East Main Street
Fincastle, Virginia 24090


Project No. 90142
Date: April, 1991

"AS BUILT"

AF 31714

## LEGEND

- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER CLEANOUT
- PROPOSED FORCE MAIN
- APPROXIMATE LOCATION OF EXISTING SEWER LINES
- SERVICE CONNECTION
- WELDED STEEL CASING
- S.S. SANITARY SEWER
- BRANCH

## INDEX


| | SHEET |
|---|---|
| COVER SHEET | 1 |
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| CONTRACT II : SEWAGE COLLECTION SYSTEM | |
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| CONTRACT I : TREATMENT PLANT | |
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| WASTEWATER TREATMENT PLANT | 16 |
| SAND DRYING BEDS | 17 |
| CONTROL BUILDING & ELECTRICAL | 18 |
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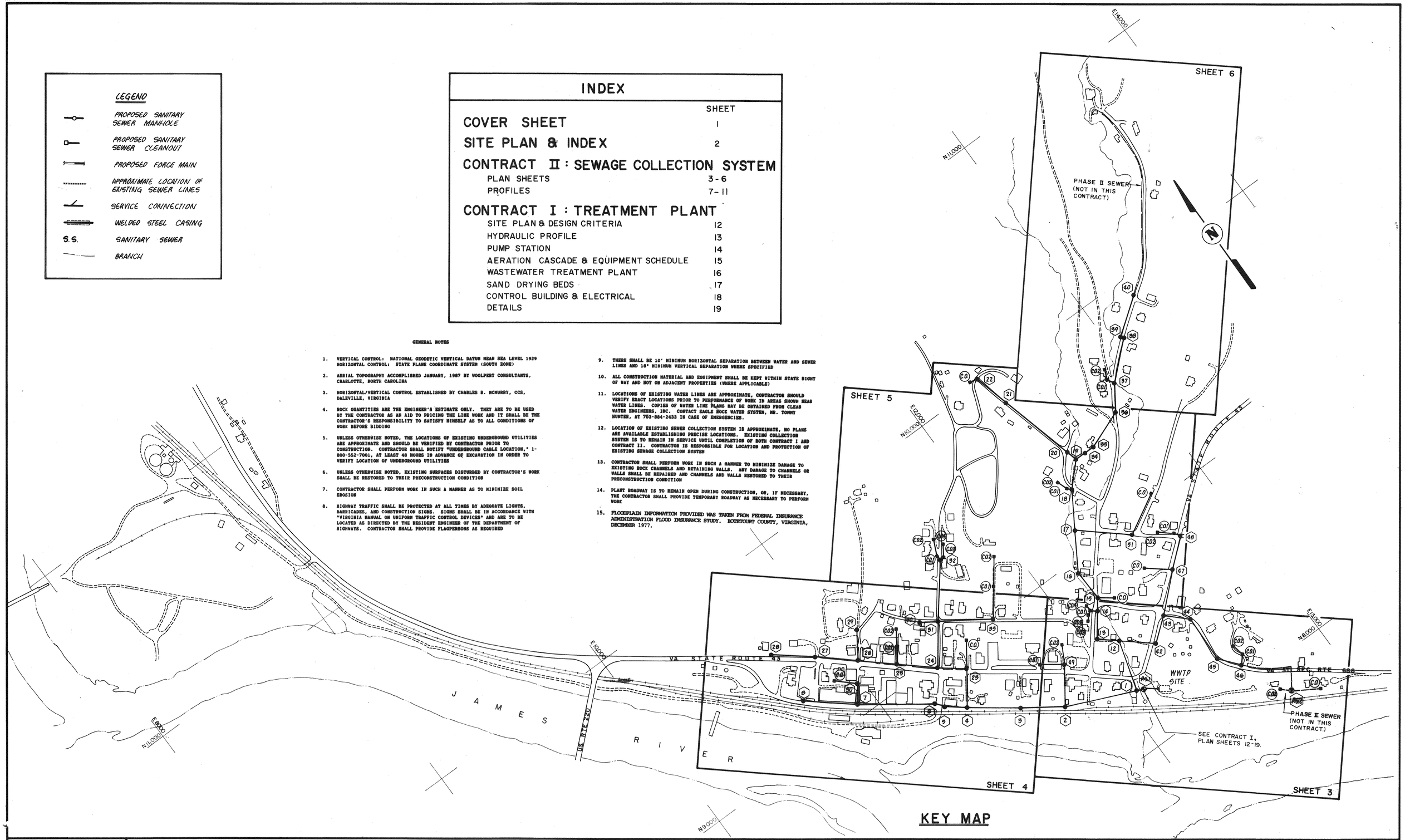
### GENERAL NOTES

1. VERTICAL CONTROL: NATIONAL GEODETIC VERTICAL DATUM MEAN SEA LEVEL 1929
   HORIZONTAL CONTROL: STATE PLANE COORDINATE SYSTEM (SOUTH ZONE)
2. AERIAL TOPOGRAPHY ACCOMPLISHED JANUARY, 1987 BY WOOLPERT CONSULTANTS, CHARLOTTE, NORTH CAROLINA
3. HORIZONTAL/VERTICAL CONTROL ESTABLISHED BY CHARLES R. MCNURRY, CCS, DALEVILLE, VIRGINIA
4. ROCK QUANTITIES ARE THE ENGINEER'S ESTIMATE ONLY. THEY ARE TO BE USED BY THE CONTRACTOR AS AN AID TO PRICING THE LINE WORK AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SATISFY HIMSELF AS TO ALL CONDITIONS OF WORK BEFORE BIDDING
5. UNLESS OTHERWISE NOTED, THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND SHOULD BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY "UNDERGROUND CABLE LOCATION," 1-800-552-7001, AT LEAST 48 HOURS IN ADVANCE OF EXCAVATION IN ORDER TO VERIFY LOCATION OF UNDERGROUND UTILITIES
6. UNLESS OTHERWISE NOTED, EXISTING SURFACES DISTURBED BY CONTRACTOR'S WORK SHALL BE RESTORED TO THEIR PRECONSTRUCTION CONDITION
7. CONTRACTOR SHALL PERFORM WORK IN SUCH A MANNER AS TO MINIMIZE SOIL EROSION
8. HIGHWAY TRAFFIC SHALL BE PROTECTED AT ALL TIMES BY ADEQUATE LIGHTS, BARRICADES, AND CONSTRUCTION SIGNS. SIGNS SHALL BE IN ACCORDANCE WITH "VIRGINIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AND ARE TO BE LOCATED AS DIRECTED BY THE RESIDENT ENGINEER OF THE DEPARTMENT OF HIGHWAYS. CONTRACTOR SHALL PROVIDE FLAGPERSONS AS REQUIRED
9. THERE SHALL BE 10' MINIMUM HORIZONTAL SEPARATION BETWEEN WATER AND SEWER LINES AND 18" MINIMUM VERTICAL SEPARATION WHERE SPECIFIED
10. ALL CONSTRUCTION MATERIAL AND EQUIPMENT SHALL BE KEPT WITHIN STATE RIGHT OF WAY AND NOT ON ADJACENT PROPERTIES (WHERE APPLICABLE)
11. LOCATIONS OF EXISTING WATER LINES ARE APPROXIMATE, CONTRACTOR SHOULD VERIFY EXACT LOCATIONS PRIOR TO PERFORMANCE OF WORK IN AREAS SHOWN NEAR WATER LINES. COPIES OF WATER LINE PLANS MAY BE OBTAINED FROM CLEAR WATER ENGINEERS, INC. CONTACT EAGLE ROCK WATER SYSTEM, MR. TOMMY HUNTER, AT 703-884-2433 IN CASE OF EMERGENCIES.
12. LOCATION OF EXISTING SEWER COLLECTION SYSTEM IS APPROXIMATE, NO PLANS ARE AVAILABLE ESTABLISHING PRECISE LOCATIONS. EXISTING COLLECTION SYSTEM IS TO REMAIN IN SERVICE UNTIL COMPLETION OF BOTH CONTRACT I AND CONTRACT II. CONTRACTOR IS RESPONSIBLE FOR LOCATION AND PROTECTION OF EXISTING SEWAGE COLLECTION SYSTEM
13. CONTRACTOR SHALL PERFORM WORK IN SUCH A MANNER TO MINIMIZE DAMAGE TO EXISTING ROCK CHANNELS AND RETAINING WALLS. ANY DAMAGE TO CHANNELS OR WALLS SHALL BE REPAIRED AND CHANNELS AND WALLS RESTORED TO THEIR PRECONSTRUCTION CONDITION
14. PLANT ROADWAY IS TO REMAIN OPEN DURING CONSTRUCTION, OR, IF NECESSARY, THE CONTRACTOR SHALL PROVIDE TEMPORARY ROADWAY AS NECESSARY TO PERFORM WORK
15. FLOODPLAIN INFORMATION PROVIDED WAS TAKEN FROM FEDERAL INSURANCE ADMINISTRATION FLOOD INSURANCE STUDY. BOTETOURT COUNTY, VIRGINIA, DECEMBER 1977.




KEY MAP

| | | | |
|---|---|---|---|
| Designed: WGP | **Clean Water Engineers, Inc.** | COMMUNITY OF EAGLE ROCK | Sheet: 2 of 19 |
| Drafted: LHJ | Fincastle, Virginia | WASTEWATER COLLECTION AND TREATMENT SYSTEM | Scale: 1" = 200' |
| Checked: CCB | | BOTETOURT COUNTY, VIRGINIA | Date: DEC. 1987 |
| Approved: JMD | | COMMONWEALTH OF VIRGINIA JAMES M. DAUGHERTY, JR. No. 014545 PROFESSIONAL ENGINEER | Project: 86019 |

MATCH LINE SHEET 5

MATCH LINE SHEET 4

VA. ROUTE 43

VA. ROUTE 608

HIGH STREET

EXISTING WATER LINE

EXISTING WATER MAIN

WATER MAIN

APPROX. LOCATION OF EXISTING SEWER LINE

APPROX. LOC. OF EXISTING SEWER LINE

TO EXISTING LATERAL

N.02°34'26"E. 142.19'

N.43°19'24"E.-14.42'

N.49°47'55"E.-46.25'

S.51°31'51"E.-101.08

N02°49'50"W. 42.92'

S48°24'32"W. 71.93'

JACK & BORE 48'-18" WELDED STEEL CASING

JACK & BORE 16'-12" WELDED STEEL CASING (RESTORE WALL TO ORIGINAL CONDITION IF DAMAGED)

RESTORE CHANNEL & RIP RAP

N.36°06'26"E. 139.73'

N48°11'58"W-108.93'

JACK & BORE 25'-18" WELDED STEEL CASING

N.52°27'58"E. 146.59'

S45°34'32"E.-133.18'

JACK & BORE 20'-16" WELDED STEEL CASING

S49°53'27"E. 182.79'

EXISTING S.S.

EXISTING WATER LINE

N.28°06'37"E. 146.49'

N.53°29'22"W-121.62'

JACK & BORE 25'-16" WELDED STEEL CASING

N.37°30'04"E 63.36'

N.47°31'10"W.-389.06'

N.55°45'38"W. 123.16'

N.36°35'36"E. 126.79'

N.66°36'11"W.-231.60'

N68°06'57"W 44.57'

S.10°31'26"E. 82.00'

S44°39'15"E-142.51'

S.56°50'44"E. 84.72'

S.56°37'11"E.-264.36'

S.65°11'33"E. 90.91'

S.56°09'52"E. 120.63'

S.35°28'38"E.-123.41'

N.49°35'37"E.-56.10'

N.09°24'59"W.-107.51'

S.01°03'27"W. 242.92'

N.73°49'59"E. 85.0'

N 20°30'41"E.

2-12'x 20' SLUDGE DRYING BEDS

PUMP STATION #1

CONTROL BUILDING

STP

Conc. Found.

20,000 gpd WASTEWATER TREATMENT PLANT (SEE CONTRACT I SHEETS 12 TO 19)

APPROXIMATE RAILROAD R/W

CSX RAILROAD

END CONTRACT II

NOTE: CONCRETE BLOCK SHED TO BE DEMOLISHED BY CONTRACTOR AND REMOVED FROM SITE. AREA TO BE FINE GRADED AND RESEEDED.

NOTE: CONTRACT II INCLUDES TIE-IN ONLY TO PS-1 & MH 54. THE CONSTRUCTION OF PS-1 AND MH 54 IS PART OF CONTRACT I. THE COORDINATION OF THE ING CONTRACT I & II TOGETHER IS THE RESPONSIBILITY OF BOTH CONTRACTORS.

JAMES RIVER

THIS SECTION WAS NOT BUILT!!!

COMMUNITY CENTER

PARSONAGE

CHURCH

ASPHALT PARKING LOT

CONCRETE V-DITCH

CONC. PAD

GRAVEL ROAD

ROCK WALL

TRAILER

ABANDONED REG

## KEY TO PROFILES

| FROM | TO | PROFILE SHEET |
|---|---|---|
| PUMP STA. #1 | TO MH 3 | 7 |
| PUMP STA. #1 | TO MH 58 | 11 |
| MH 1 | TO MH 12 TO MH 15 | 8 |
| MH 2 | TO MH 49 TO C.O.'8 | 11 |
| MH 12 | TO MH 46 TO C.O.'5 | 9 |
| MH 14 | TO C.O. 4 | 11 |
| MH 15 | TO C.O. | 8 |
| MH 43 | TO MH 47 | 9 |

M.H. C.O.

- MANHOLES OR C.O. MARKED WITH THIS TYPE OF DESIGNATION NEED TO HAVE A CONCRETE PROTECTIVE RING (SEE DETAIL SHEET 19 OF 19.)

EROSION CONTROL

SF SILT FENCE

RB RETENTION BASIN

NOTE:
LOCATIONS OF EXISTING WATER LINES ARE APPROXIMATE AND MUST BE FIELD VERIFIED BY CONTRACTOR.

S38°37'53"W 48.23'

N37°37'58"W 32.41'

N 37°14'24"E-140.0'

N 37°14'24"E-69.9'

8"

DETAIL OF CLEANOUTS FROM MANHOLE 14

NOT TO SCALE

| | |
|---|---|
| Designed: | WGP |
| Drafted: | LHJ |
| Checked: | CCB |
| Approved: | JMD |

# Clean Water Engineers, Inc.

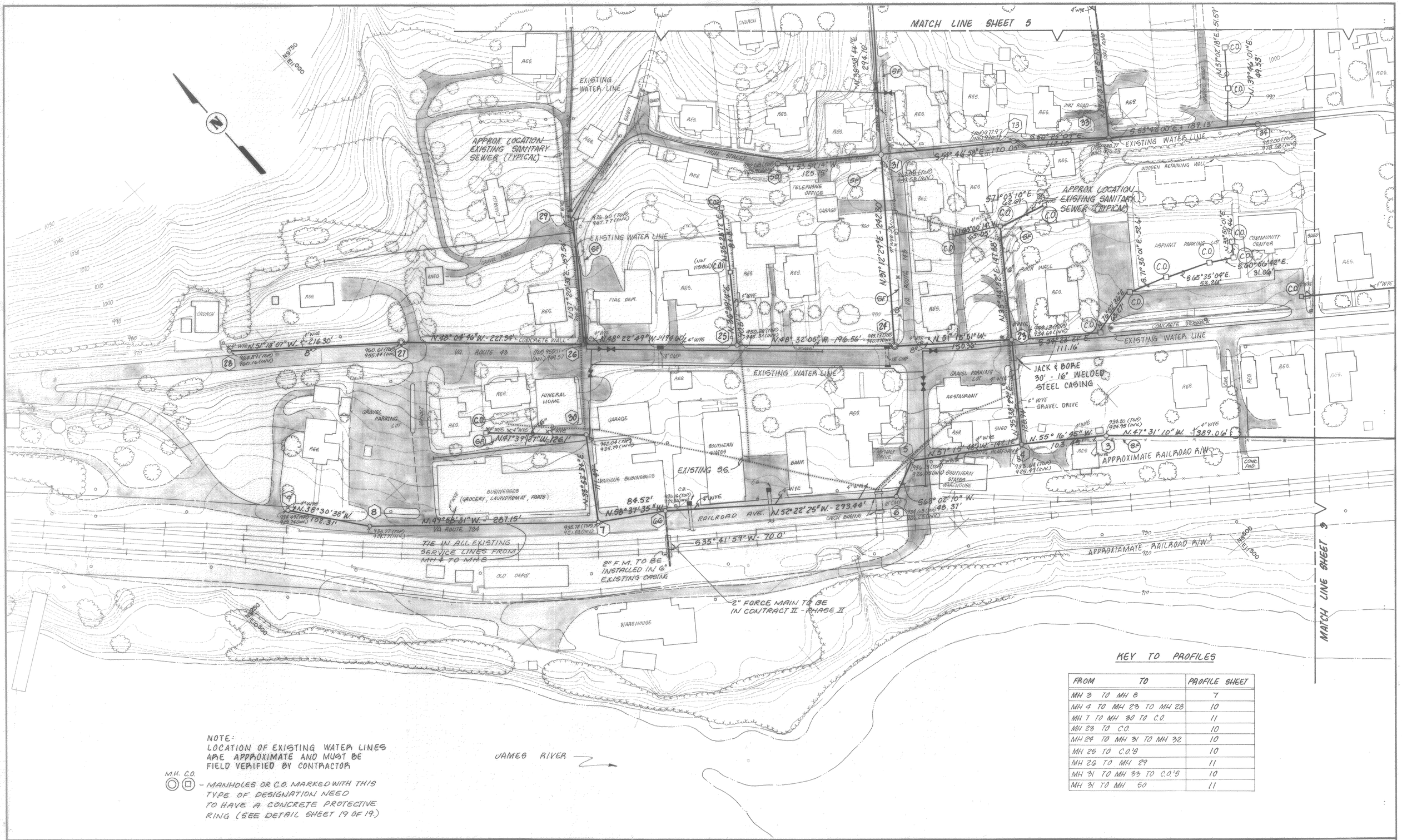
Fincastle, Virginia

COMMUNITY OF EAGLE ROCK
WASTEWATER COLLECTION AND TREATMENT SYSTEM
BOTETOURT COUNTY, VIRGINIA

CONTRACT II
"AS BUILT"

David J. Rigby

| | |
|---|---|
| Sheet: | 3 of 19 |
| Scale: | 1"=50' |
| Date: | DEC. 1987 |
| Project: | 86019 |




NOTE:
LOCATION OF EXISTING WATER LINES ARE APPROXIMATE AND MUST BE FIELD VERIFIED BY CONTRACTOR

M.H. C.O. – MANHOLES OR C.O. MARKED WITH THIS TYPE OF DESIGNATION NEED TO HAVE A CONCRETE PROTECTIVE RING (SEE DETAIL SHEET 19 OF 19.)

## KEY TO PROFILES

| FROM | TO | PROFILE SHEET |
|---|---|---|
| MH 3 | TO MH 8 | 7 |
| MH 4 | TO MH 23 TO MH 28 | 10 |
| MH 7 | TO MH 30 TO C.O. | 11 |
| MH 23 | TO C.O. | 10 |
| MH 24 | TO MH 31 TO MH 32 | 10 |
| MH 25 | TO C.O.'S | 10 |
| MH 26 | TO MH 29 | 11 |
| MH 31 | TO MH 33 TO C.O.'S | 10 |
| MH 31 | TO MH 50 | 11 |

| | | | |
|---|---|---|---|
| Designed: WGP | **Clean Water Engineers, Inc.** | COMMUNITY OF EAGLE ROCK | CONTRACT II "AS BUILT" |
| Drafted: LHJ | Fincastle, Virginia | WASTEWATER COLLECTION AND TREATMENT SYSTEM | Sheet: 4 of 19 |
| Checked: CCB | | BOTETOURT COUNTY, VIRGINIA | Scale: 1"=50' |
| Approved: JMD | | COMMONWEALTH OF VIRGINIA — DAVID J. RIGBY No. 8169 — REGISTERED PROFESSIONAL ENGINEER | Date: DEC. 1987 |
| | | | Project: 86019 |

MATCH LINE THIS SHEET

MATCH LINE SHEET 6

N.13°48'13"W.-236.66'

KEY TO PROFILES

| FROM TO | PROFILE SHEET |
|---|---|
| MH 15 TO MH 22 TO C.O. | 8 |
| MH 15 TO C.O. | 8 |
| MH 17 TO MH 51 TO C.O. | 8 |
| MH 18 TO C.O.'S | 11 |
| MH 19 TO MH 36 | 9 |
| MH 31 TO MH 32 TO C.O. 2 | 10 |
| MH 32 TO C.O. 4 | 10 |
| MH 33 TO C.O.'S | 10 |
| MH 43 TO MH 48 TO C.O.'S | 9 |
| MH 47 TO C.O. | 9 |

NOTE: CARPORT TO BE DISASSEMBLED TO ALLOW FOR CONSTRUCTION, THEN REASSEMBLED OR REPLACED.

NOTE: ROCK CHANNEL TO BE RESTORED TO ORIGINAL CONDITION

NOTE: LOCATIONS OF EXISTING WATER LINES ARE APPROXIMATE AND MUST BE FIELD VERIFIED BY CONTRACTOR.

M.H. C.O. - MANHOLES OR C.O. MARKED WITH THIS TYPE OF DESIGNATION NEED TO HAVE A CONCRETE PROTECTIVE RING (SEE DETAIL SHEET 19 OF 19)

N.32°48'34"E 151.60'

N.34°11'49"W. 41.0'

N.49°33'56"W. 229.51'

N.49°27'20"W. 115.66'

N.56°47'39"W. 46.87'

N.42°55'26"W. 71.34'

N.51°17'23"E.-185.35'

N.36°48'02"E.-223.78'

N.60°11'12"E.-231.85'

N.70°30'41"E.-237.98'

N.13°44'50"W.-317.83'

N.11°09'32"W.-130.83'

N.36°33'44"E-166.34'

N.32°40'13"E-146.00'

N.36°38'48"E-232.10'

N.33°08'08"E-234.57'

N.32°03'38"E-176.44'

N.14°01'52"W.-44.96'

N.35°26'17"W-29.50'

N.14°19'39"E-152.53'

N.82°34'28"E-112.17'

N.49°47'55"E.-46.28'

S.60°48'52"E.-101.99'

S.51°31'51"E.-101.08'

S.61°17'32"E-82.51'

MATCH LINE SHEET 4

MATCH LINE SHEET 3

| | |
|---|---|
| Designed: | WGP |
| Drafted: | LHJ |
| Checked: | CCB |
| Approved: | JMD |

# Clean Water Engineers, Inc.

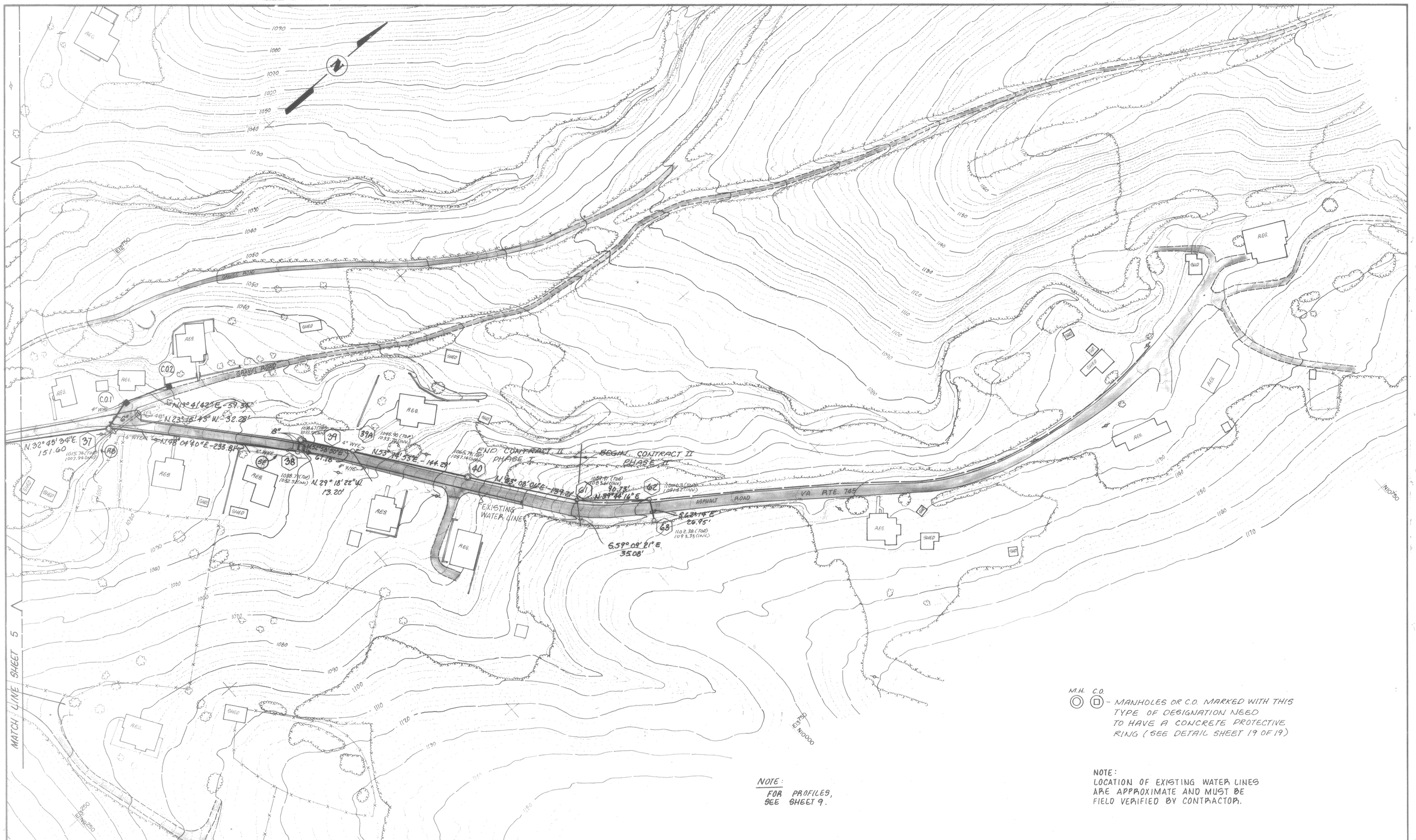
Fincastle, Virginia

COMMUNITY OF EAGLE ROCK
WASTEWATER COLLECTION AND TREATMENT SYSTEM
BOTETOURT COUNTY, VIRGINIA

CONTRACT II
"AS BUILT"

COMMONWEALTH OF VIRGINIA
DAVID J. RIGBY
No. 8169
CERTIFIED PROFESSIONAL ENGINEER

| | |
|---|---|
| Sheet: | 5 of 19 |
| Scale: | 1"= 50' |
| Date: | DEC. 1987 |
| Project: | 86019 |

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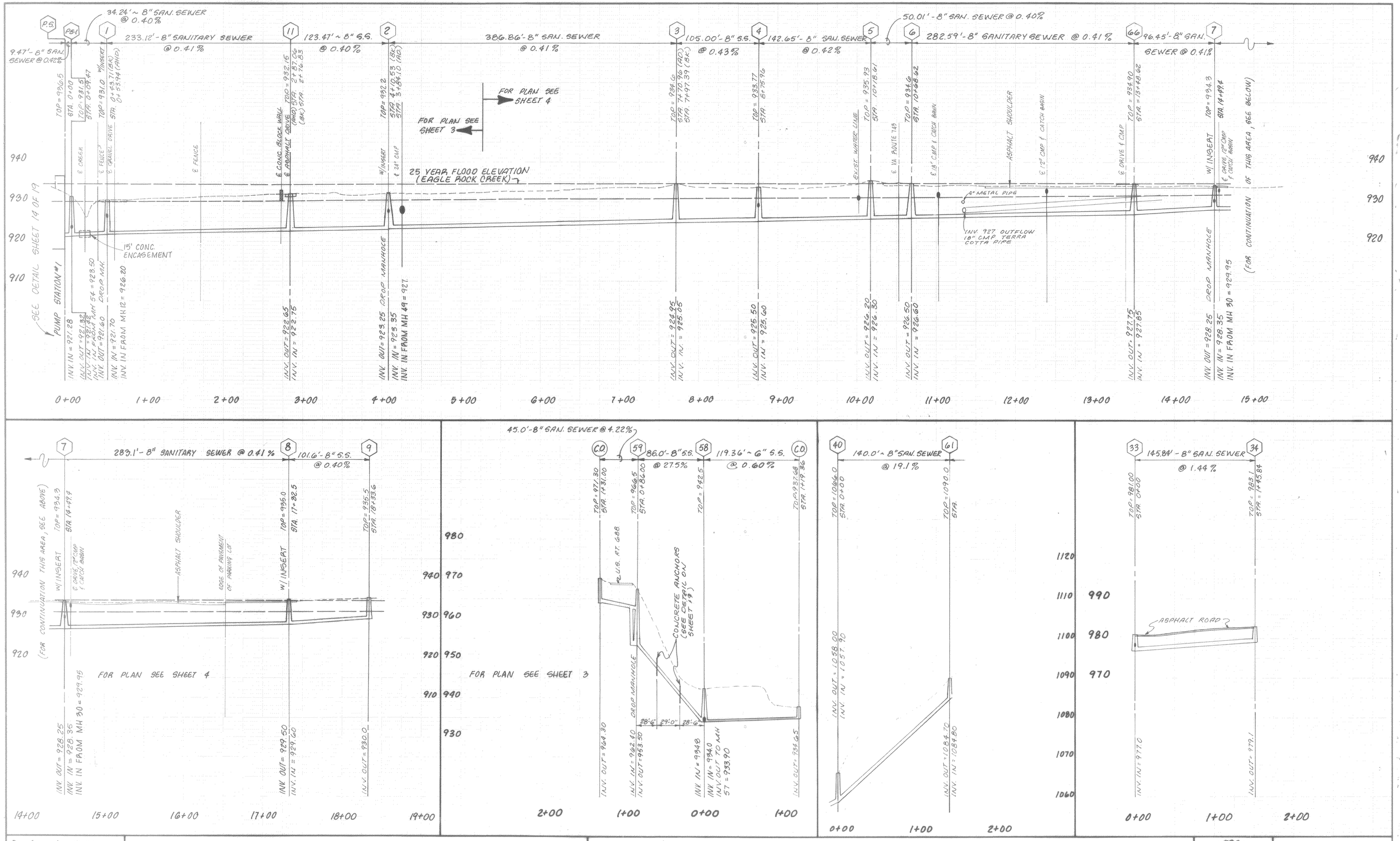
|---|---|---|---|
| Designed: WGP | **Clean Water Engineers, Inc.** | COMMUNITY OF EAGLE ROCK | CONTRACT II "AS BUILT" |
| Drafted: JRM | Fincastle, Virginia | WASTEWATER COLLECTION AND TREATMENT SYSTEM | COMMONWEALTH OF VIRGINIA — DAVID J. RIGBY — No. 8169 — CERTIFIED PROFESSIONAL ENGINEER |
| Checked: CCB | | BOTETOURT COUNTY, VIRGINIA | Sheet: 6 of 19 |
| Approved: JMD | | | Scale: 1"= 50' |
| | | | Date: DEC. 1987 |
| | | | Project: 86019 |




| | |
|---|---|
| Designed: CCB | |
| Drafted: JRM | |
| Checked: CCB | |
| Approved: JMD | |

# Clean Water Engineers, Inc.

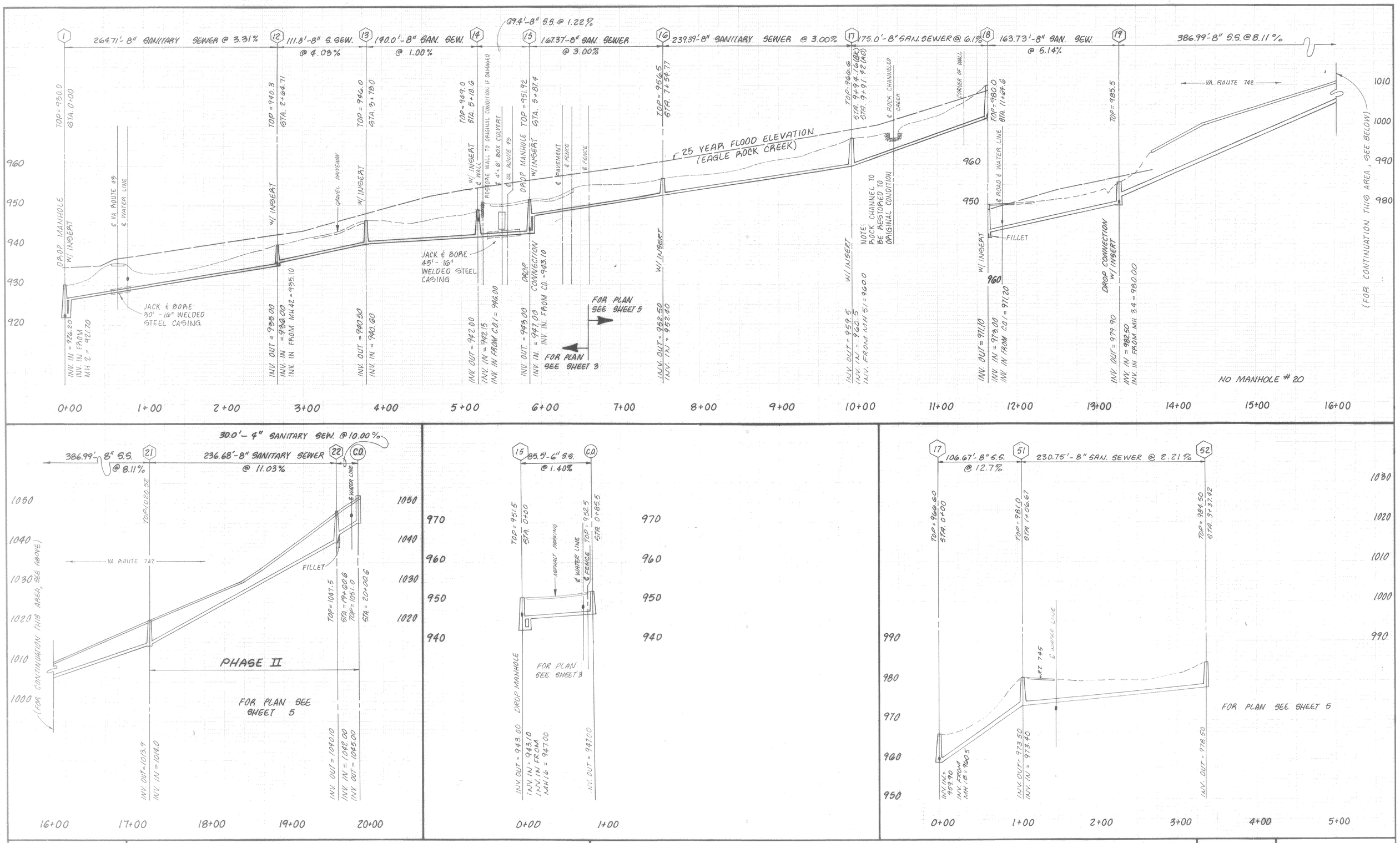
Fincastle, Virginia

COMMUNITY OF EAGLE ROCK
WASTEWATER COLLECTION AND TREATMENT SYSTEM
BOTETOURT COUNTY, VIRGINIA

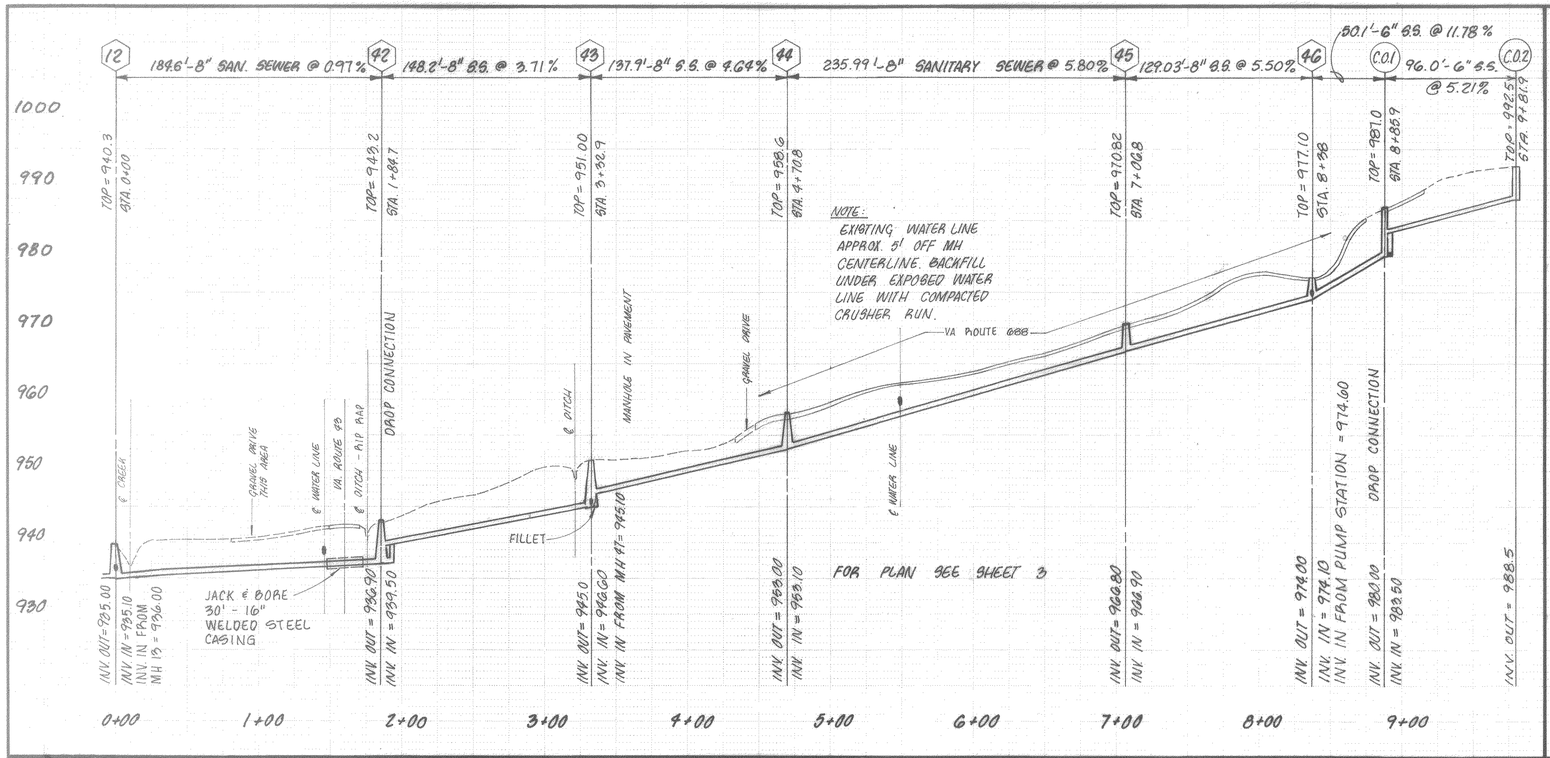
CONTRACT II
"AS BUILT"

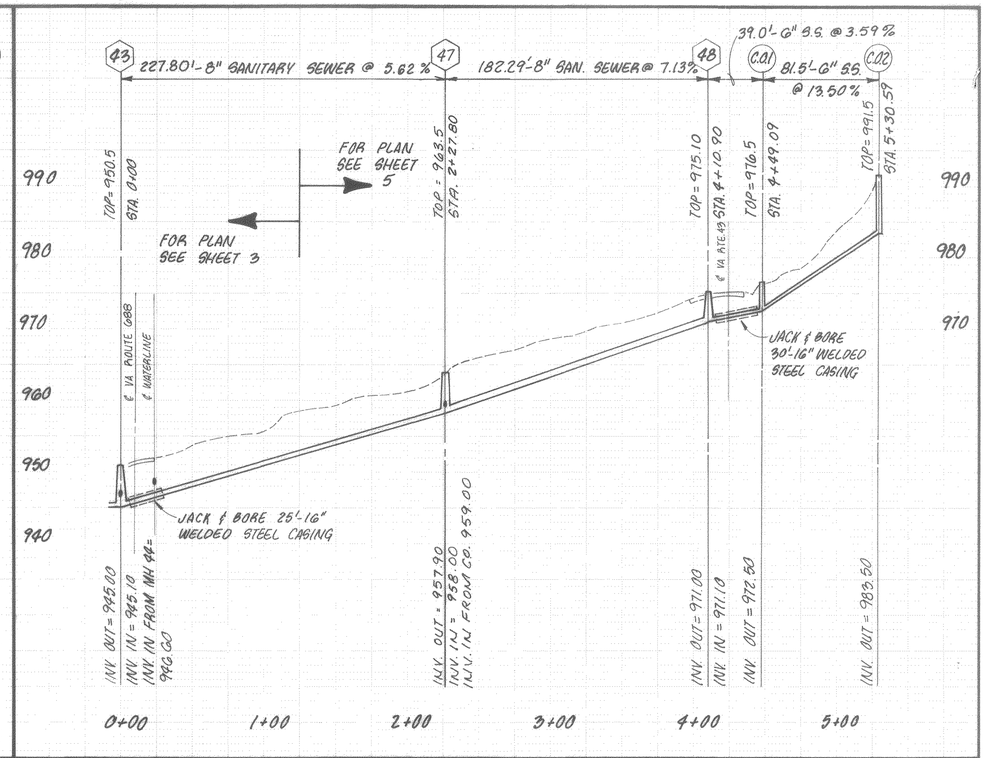
COMMONWEALTH OF VIRGINIA
DAVID J. RIGBY
No. 8169
CERTIFIED PROFESSIONAL ENGINEER

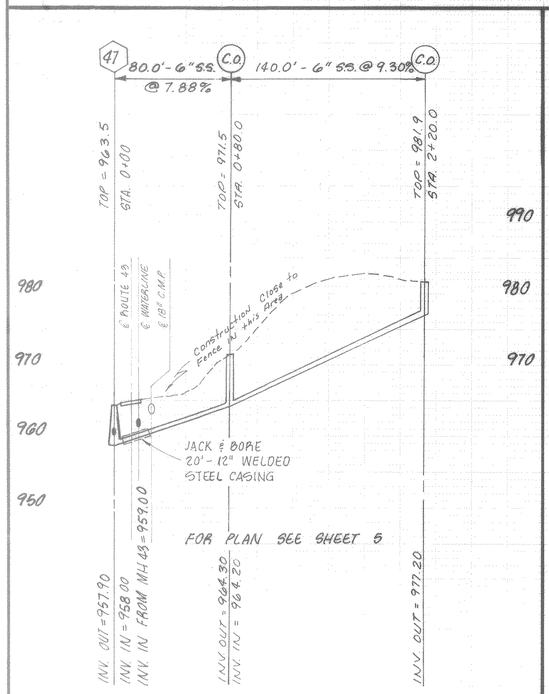
| | |
|---|---|
| Sheet: | 7 of 19 |
| Scale: | 1" = 10' VERT. 1" = 50' HORIZ. |
| Date: | DEC. 1987 |
| Project: | 86019 |

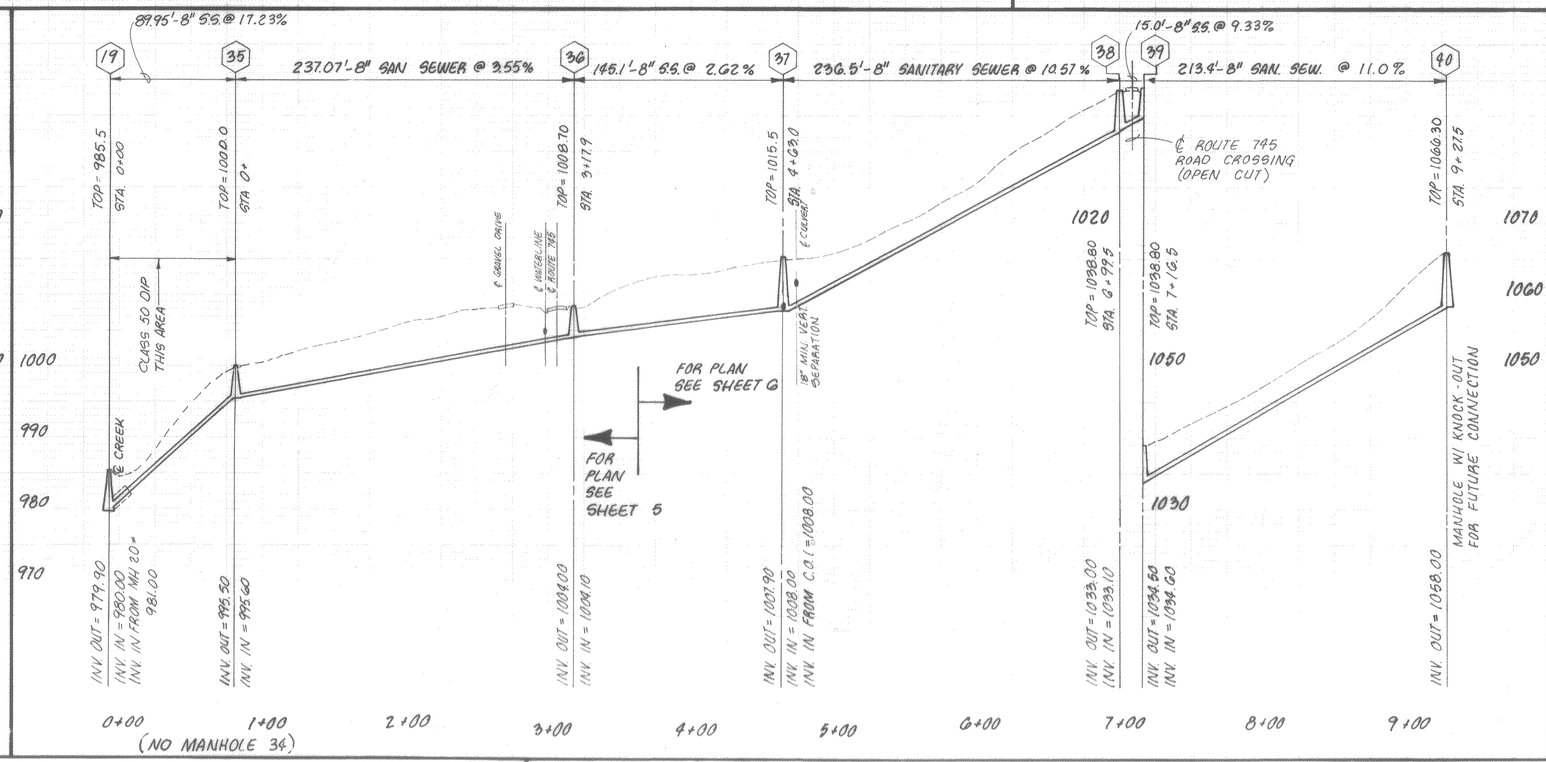


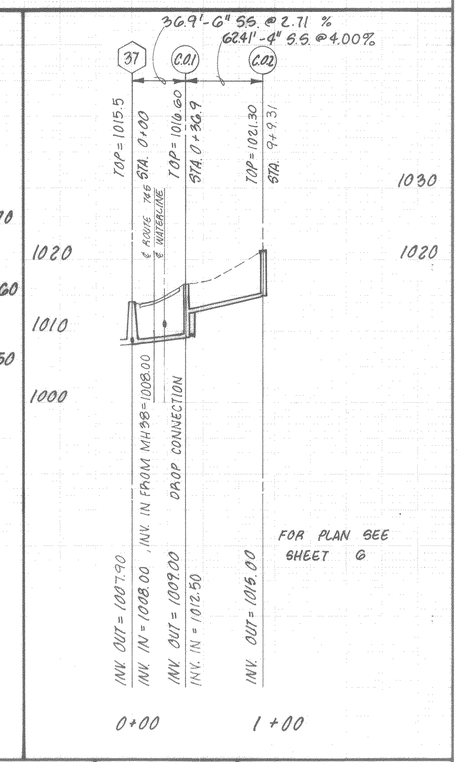

| | | | |
|---|---|---|---|
| Designed: CCB | **Clean Water Engineers, Inc.** | COMMUNITY OF EAGLE ROCK | CONTRACT II "AS BUILT" |
| Drafted: TAM | Fincastle, Virginia | WASTEWATER COLLECTION AND TREATMENT SYSTEM | COMMONWEALTH OF VIRGINIA — DAVID J. RIGBY — No. 8169 — CERTIFIED PROFESSIONAL ENGINEER |
| Checked: CCB | | BOTETOURT COUNTY, VIRGINIA | Sheet: 8 of 19 |
| Approved: JMD | | | Scale: 1"=10' VERT. 1"=50' HORIZ. |
| | | | Date: DEC. 1987 |
| | | | Project: 86019 |




| | | | |
|---|---|---|---|
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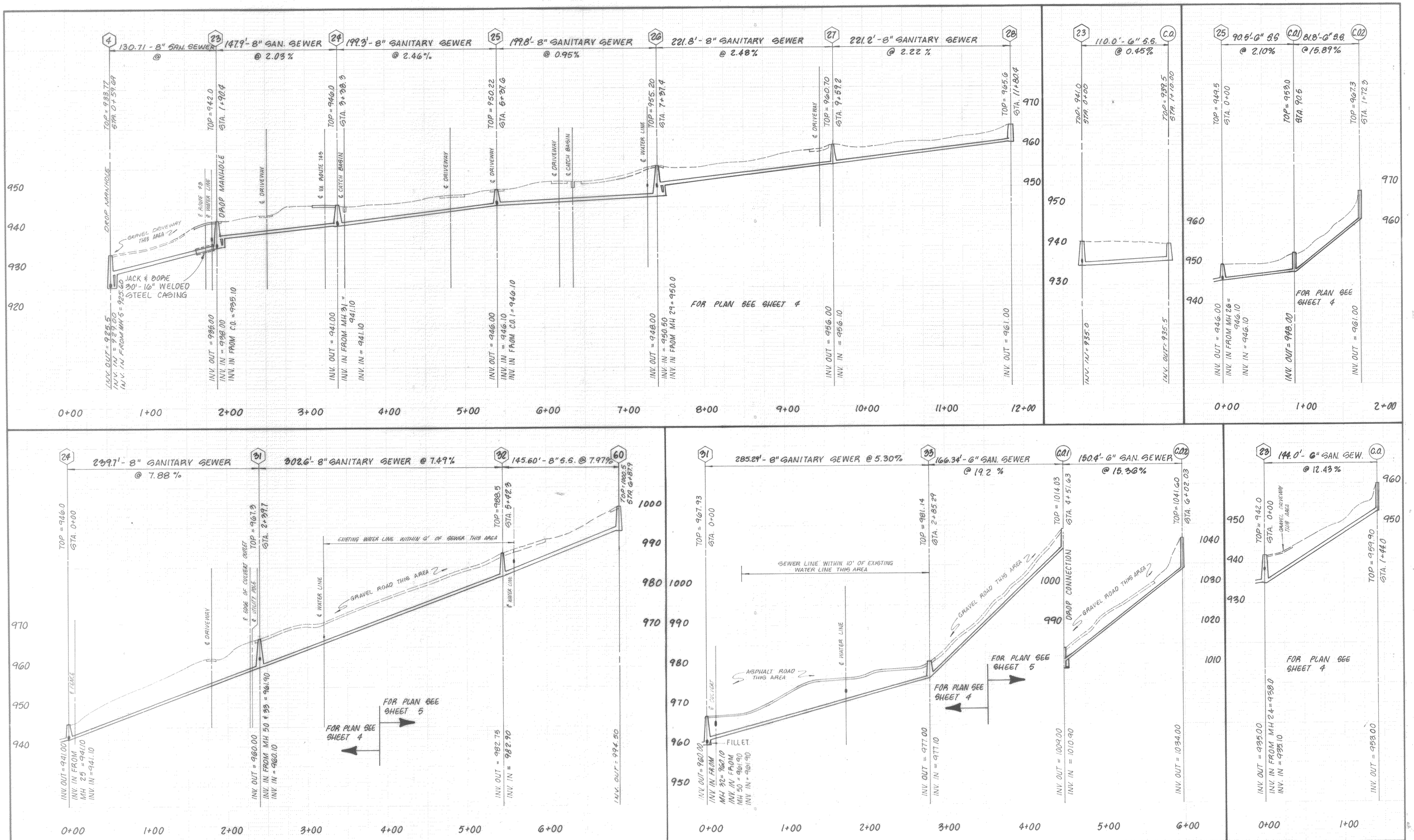
| Drafted: JRM | Fincastle, Virginia | WASTEWATER COLLECTION AND TREATMENT SYSTEM | COMMONWEALTH OF VIRGINIA — DAVID J. RIGBY — No. 8169 — CERTIFIED PROFESSIONAL ENGINEER |
| Checked: CCB | | BOTETOURT COUNTY, VIRGINIA | Sheet: 9 of 19 |
| Approved: JMD | | | Scale: 1"=10' VERT. 1"=50' HORIZ. |
| | | | Date: DEC. 1987 |
| | | | Project: 86019 |




| | |
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| Designed: | CCB |
| Drafted: | TAM |
| Checked: | CCB |
| Approved: | JMD |

# Clean Water Engineers, Inc.

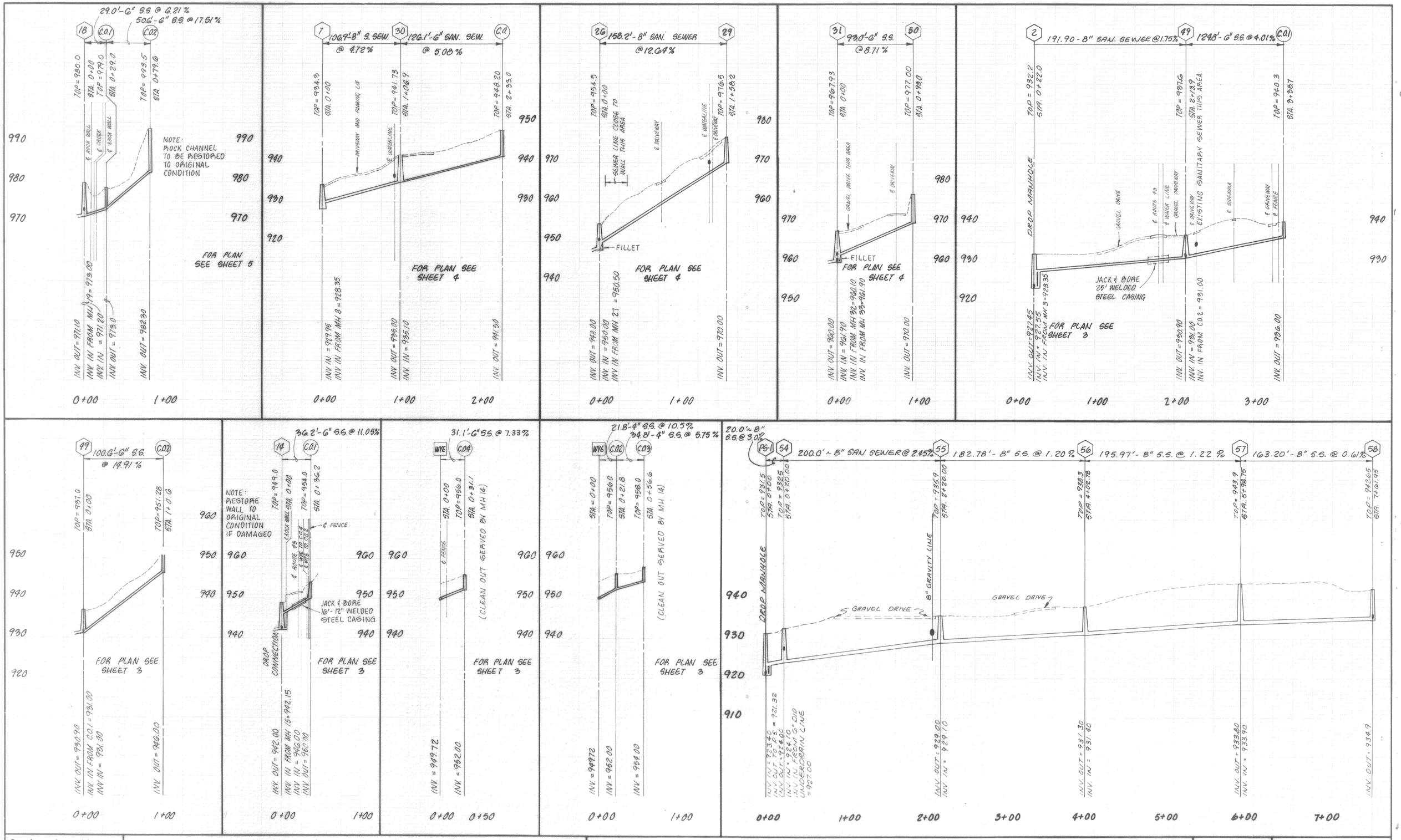
Fincastle, Virginia

COMMUNITY OF EAGLE ROCK
WASTEWATER COLLECTION AND TREATMENT SYSTEM
BOTETOURT COUNTY, VIRGINIA

CONTRACT II
"AS BUILT"

COMMONWEALTH OF VIRGINIA
DAVID J. RIGBY
No. 8169
CERTIFIED PROFESSIONAL ENGINEER

| | |
|---|---|
| Sheet: | 10 of 19 |
| Scale: | 1"=10' VERT. 1"=50' HORIZ. |
| Date: | DEC. 1987 |
| Project: | 86019 |




| | |
|---|---|
| Designed: CCB | |
| Drafted: JRM | |
| Checked: CCB | |
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# Clean Water Engineers, Inc.

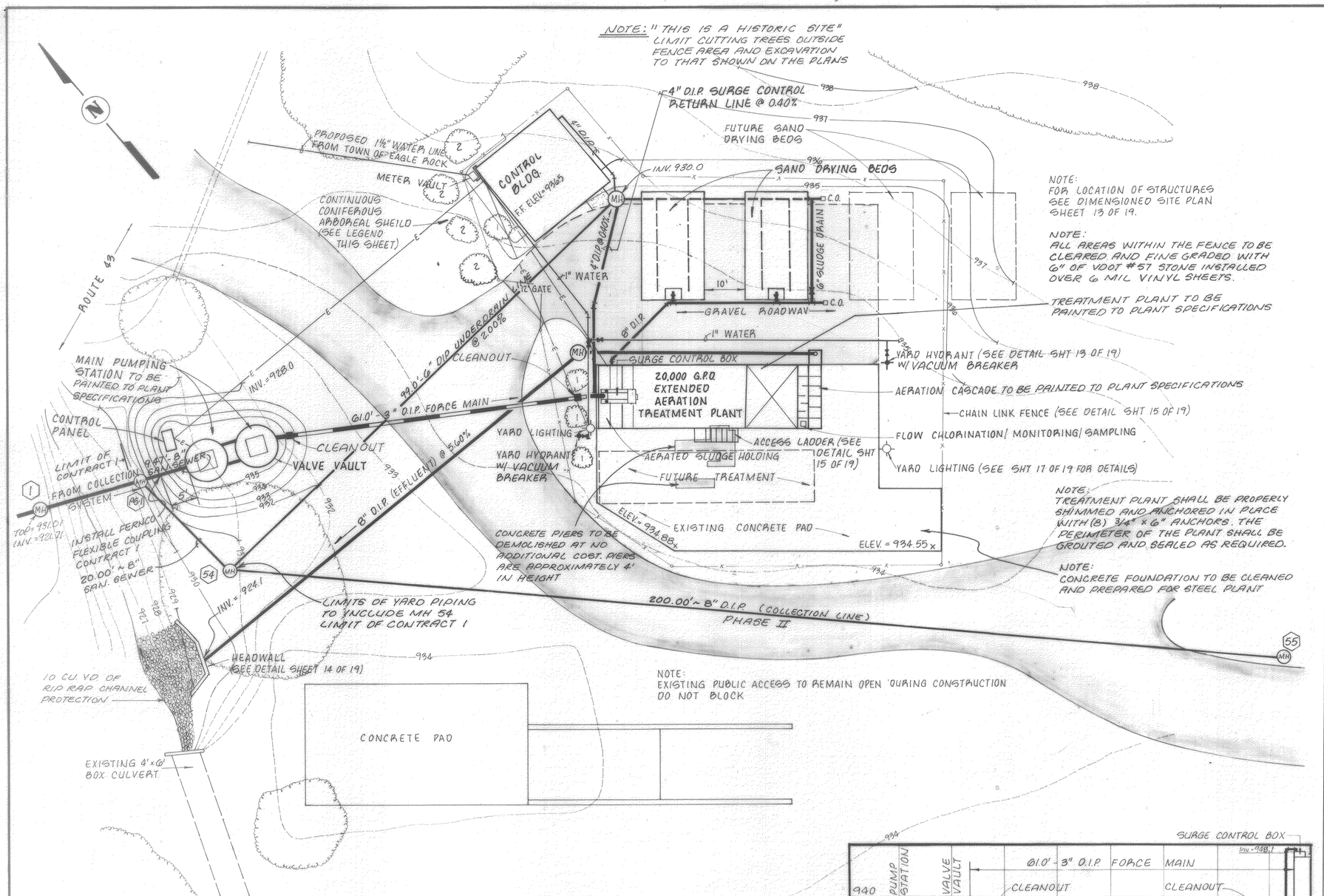
Fincastle, Virginia

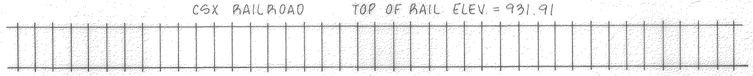
COMMUNITY OF EAGLE ROCK
WASTEWATER COLLECTION AND TREATMENT SYSTEM
BOTETOURT COUNTY, VIRGINIA

CONTRACT II
"AS BUILT"

COMMONWEALTH OF VIRGINIA — DAVID J. RIGBY — No. 8169 — CERTIFIED PROFESSIONAL ENGINEER

| | |
|---|---|
| Sheet: | 11 of 19 |
| Scale: | 1" = 10' VERT. 1" = 50' HORIZ. |
| Date: | DEC. 1987 |
| Project: | 86019 |



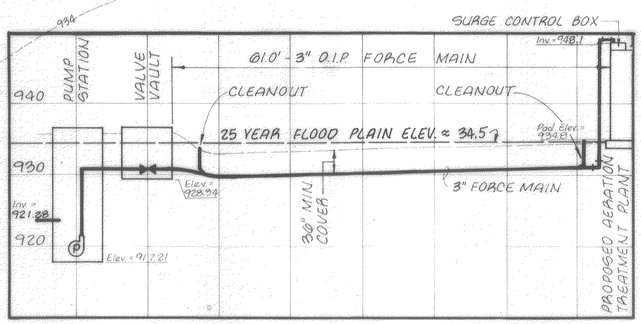




LEGEND

- FORCE MAIN
- GRAVITY SEWER
- (1) BLUE SPRUCE
- (2) WHITE PINE
- —E— BURIED ELECTRICAL

## SITE PLAN

SCALE: 1" = 10'




## FORCE MAIN PROFILE

Scale: Horz. 1"=10', Vert. 1"=10'

DESIGN CRITERIA

I. WASTEWATER CHARACTERISTICS:

| | |
|---|---|
| Design Population | 300 @ 65 gpcd |
| Design Flow | 20,000 gpd |
| Biochemical Oxygen Demand | 225 mg/l |
| Total Suspended Solids | 225 mg/l |
| 100 Year Flood Elevation | 936' |

II. DESIRED EFFLUENT QUALITY

| | |
|---|---|
| Biochemical Oxygen Demand | 30 mg/l |
| Total Suspended Solids | 30 mg/l |
| Dissolved Oxygen | 6.0 mg/l |

III. TREATMENT COMPONENTS

| Wastewater: | Sludge Handling: |
|---|---|
| Manual Bar Screen | Aerated Holding/Digester |
| Extended Aeration | Sand Drying Beds |
| Clarification | Landfill Disposal |
| Chlorination | |
| Flow Measurement | |
| Cascade Aeration | |
| Discharge to Stream | |

IV. TREATMENT PROCESS UNIT DESCRIPTIONS

Aeration Tank:

| | |
|---|---|
| Length | 24.6 ft |
| Diameter | 12.0 ft |
| Depth | 11.0 ft |
| Total Volume | 2673 $ft^3$ or 20,000 gals |
| Detention Time | 24 hrs |
| Organic Loading | 14 lbs BOD/1000 $ft^3$ |
| Air requirements @ 2100 $ft^3$/lb BOD | 78,800 $ft^3$/day = 54.7 cfm |
| Air Supplied by two (2) rotary blowers @ 70 cfm each | |

Final Clarifier (Hopper Bottomed)

| | |
|---|---|
| Length | 10.0 ft |
| Width | 10.0 ft |
| Depth | 11.0 ft |
| Total Volume | 524 $ft^3$ or 3,950 gals |
| Detention Time | 4.75 hrs |
| Surface loading rate | 200 gal/$ft_2$ |
| Weir Overflow rate | 2,000 gal/ft |

Disinfection:

Chlorine Contact Basin

| | |
|---|---|
| Length | 10 ft |
| Width | 2 ft |
| Depth | 4 ft |
| Total Volume | 80 $ft^3$ or 600 gals |
| Detention Time | 43 min @ 20,000<br>21.5 min @ 40,000 |

Flow Measurement (Instantaneous):
V-Notch Weir W/ Staff Gauge

Aeration Cascade

| | |
|---|---|
| Length | 14.5 ft |
| Width | 1.0 ft |
| Step Height | 6.0 in |
| Elevation Differential | 10 ft |

Steps Required:

Deficit Ratio = R = 1+0.11 AB (1+0.046T) $H = \sqrt[N]{\frac{C's-CA}{C's-CB}}$

Where C's=$O_2$ Saturation at critical temperature and elevation = 7.63 mg/l; A = 0.8
B = 1.3, T = 28°C, H = 6", N = # of steps, CA=$O_2$ conc. above steps
By calculation N=11

VI. SLUDGE PRODUCTION AND HANDLING

Production
@ 0.35 lbs Sludge Produced/lb BOD Removed
11.4 lbs/day = 4101 lbs/ year

Storage/Digestion

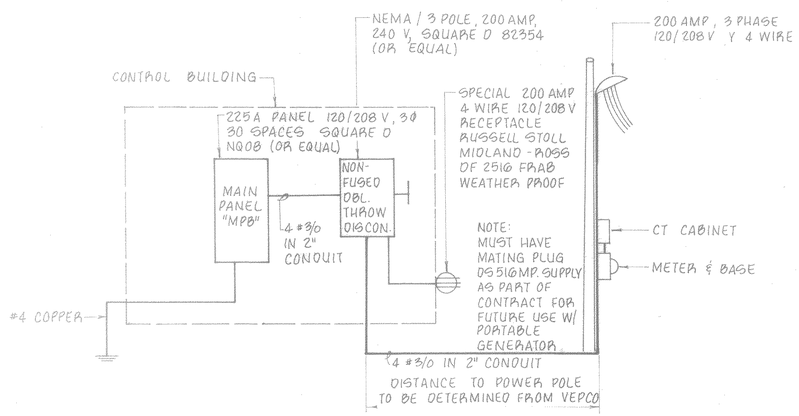
| | |
|---|---|
| Length | 4 ft |
| Width | 12 ft |
| Depth | 11 ft |
| Total Volume | 398 $ft^3$ or 2,980 gals |
| Storage Capacity | 40 days |

Sand Drying Beds (Duplex)

| | |
|---|---|
| Length | 20 ft |
| Width | 12 ft |
| Capacity | 240 $ft^3$ |
| Cycles | 7.5/bed/year |
| Loading | 8.7 lbs/$ft^2$/year |

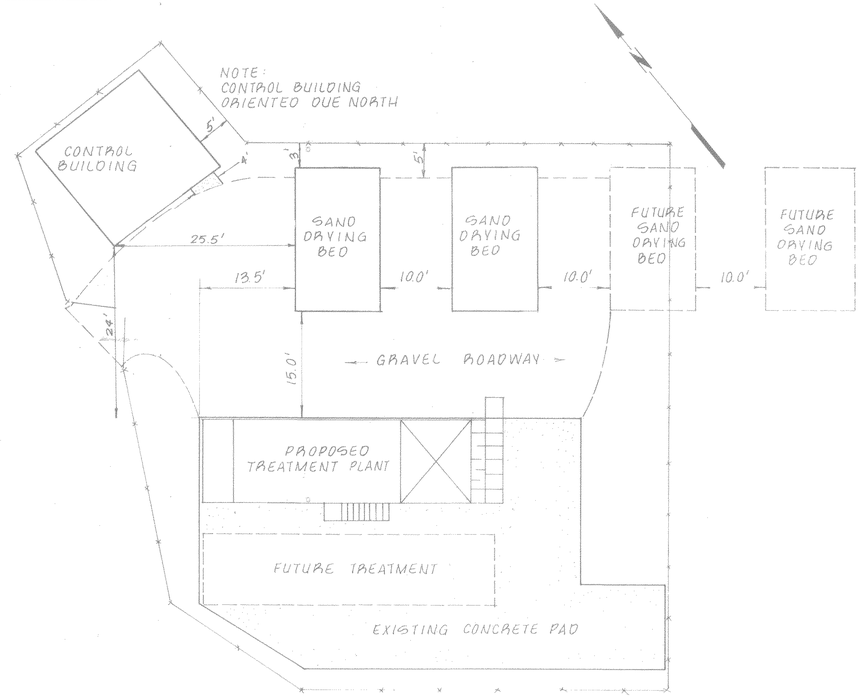
6-7-91 REV. FORCE MAIN SIZE (4" TO 3") TAO

| | | | |
|---|---|---|---|
| Designed: WGP | **Clean Water Engineers, Inc.**<br>Fincastle, Virginia | COMMUNITY OF EAGLE ROCK<br>WASTEWATER COLLECTION AND TREATMENT SYSTEM<br>BOTETOURT COUNTY, VIRGINIA | CONTRACT I<br>"AS BUILT" |
| Drafted: TAM | | | Sheet: 12 of 19 |
| Checked: CCB | | | Scale: AS SHOWN |
| Approved: JMD | | | Date: DEC. 1987 |
| | | | Project: 86019 |



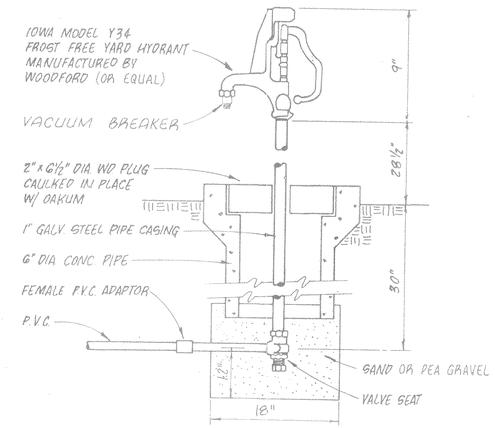

POWER RISER DIAGRAM

NO SCALE



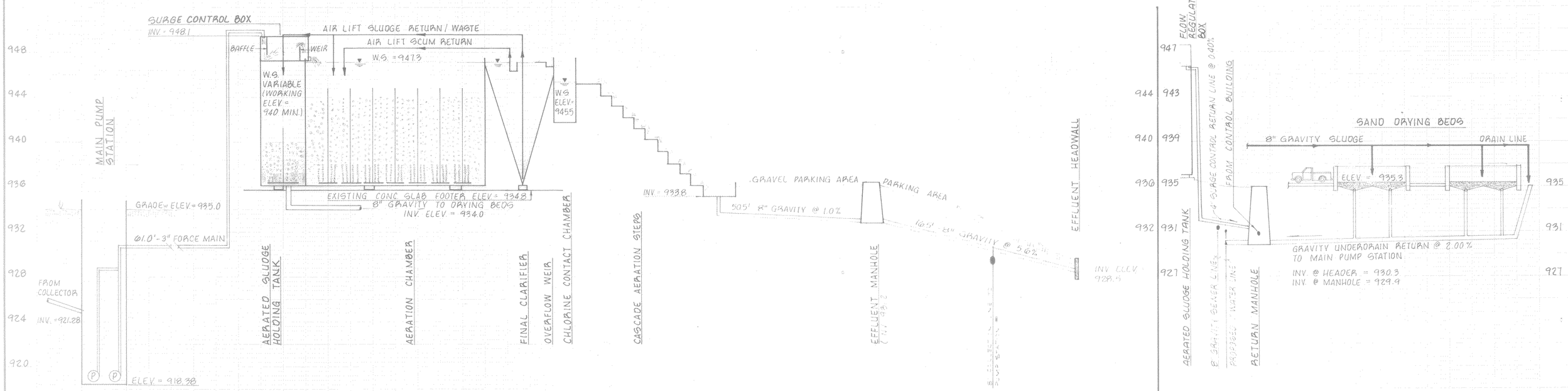

DIMENSIONED SITE PLAN

SCALE: 1" = 10'




WATER RISER

NOT TO SCALE

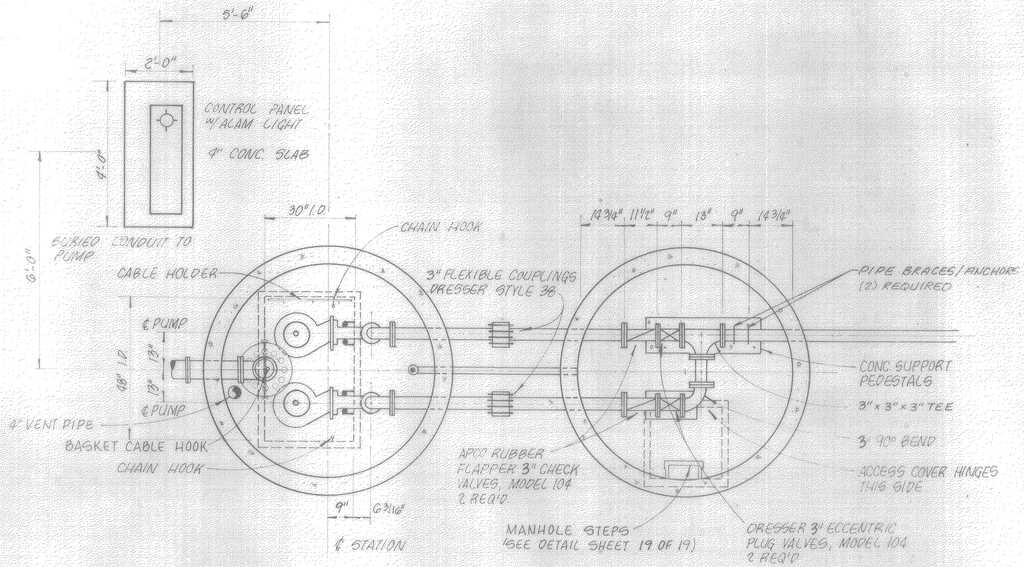



HYDRAULIC PROFILE

SCALE: HORIZ. – N.T.S.
VERT. 1" = 4'-0"

6-1-91 REV. FORCE MAIN SIZE (4" TO 3") TAP

| | | | | |
|---|---|---|---|---|
| Designed: WGP | **Clean Water Engineers, Inc.** | COMMUNITY OF EAGLE ROCK | CONTRACT I "AS BUILT" | Sheet: 13 of 19 |
| Drafted: TAM | Fincastle, Virginia | WASTEWATER COLLECTION AND TREATMENT SYSTEM | COMMONWEALTH OF VIRGINIA DAVID J. RIGBY No. 8169 CERTIFIED PROFESSIONAL ENGINEER | Scale: AS SHOWN |
| Checked: CCB | | BOTETOURT COUNTY, VIRGINIA | | Date: DEC. 1987 |
| Approved: JMD | | | | Project: 86019 |




## MAIN PUMP STATION

SCALE: 1/2" = 1'-0"

A. DESIGN CRITERIA

FLOW - INTERMITTENT OPERATION BASED ON WASTEWATER FLOW

REQ'D RATE OF FLOW - 20 GPM

DISCHARGE PIPE SIZE - 3"

MIN. SEWER VELOCITY - 2.0 FPS

DESIGN SEWER VELOCITY - 2.2 FPS

DESIGN RATE OF FLOW - 50 GPM

B. DETERMINATION OF HEAD

ELEVATION OF TOP OF DISCHARGE PIPE - 948.1

LOW WATER SHUT OFF ELEVATION - 921.0

STATIC HEAD IN FEET - 27.1

COEFFICIENT OF ROUGHNESS - 120

FRICTION LOSS FT/100 FT - 1.1

LENGTH OF FORCE MAIN - 115'

EQUIVALENT LENGTH OF FITTINGS - 94

TOTAL EQUIV. LENGTH OF PIPE - 209

FRICTION LOSS IN FEET - 2.3

TOTAL DYNAMIC HEAD - 29.4

C. PUMP SELECTION - DUPLEX STATION

MANUFACTURER - FLYGT OR EQUAL

MODEL NUMBER - CP 3085

HORSE POWER - 3.0

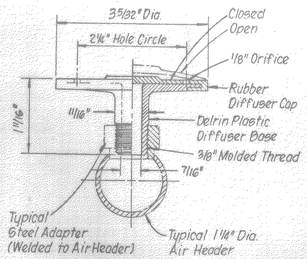
SPEED - 1750 RPM

ELECTRICAL REQUIREMENTS - 3 Ø 208

IMPELLER NUMBER 473

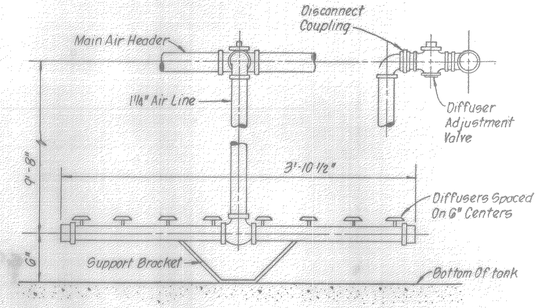
PUMP SIZE - 3"

ACTUAL PUMPING CONDITIONS - 68 GPM @ 30.5' TDH



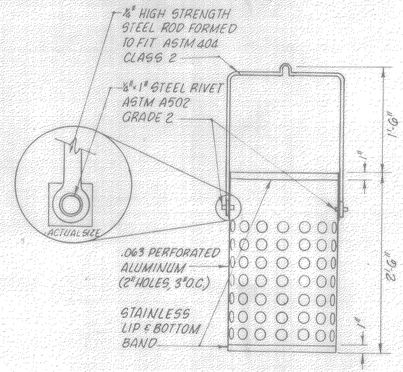

## DIFFUSER

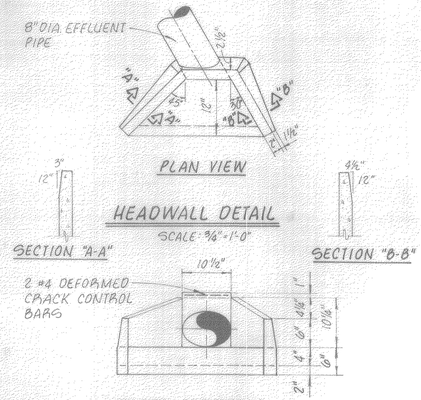
NOT TO SCALE

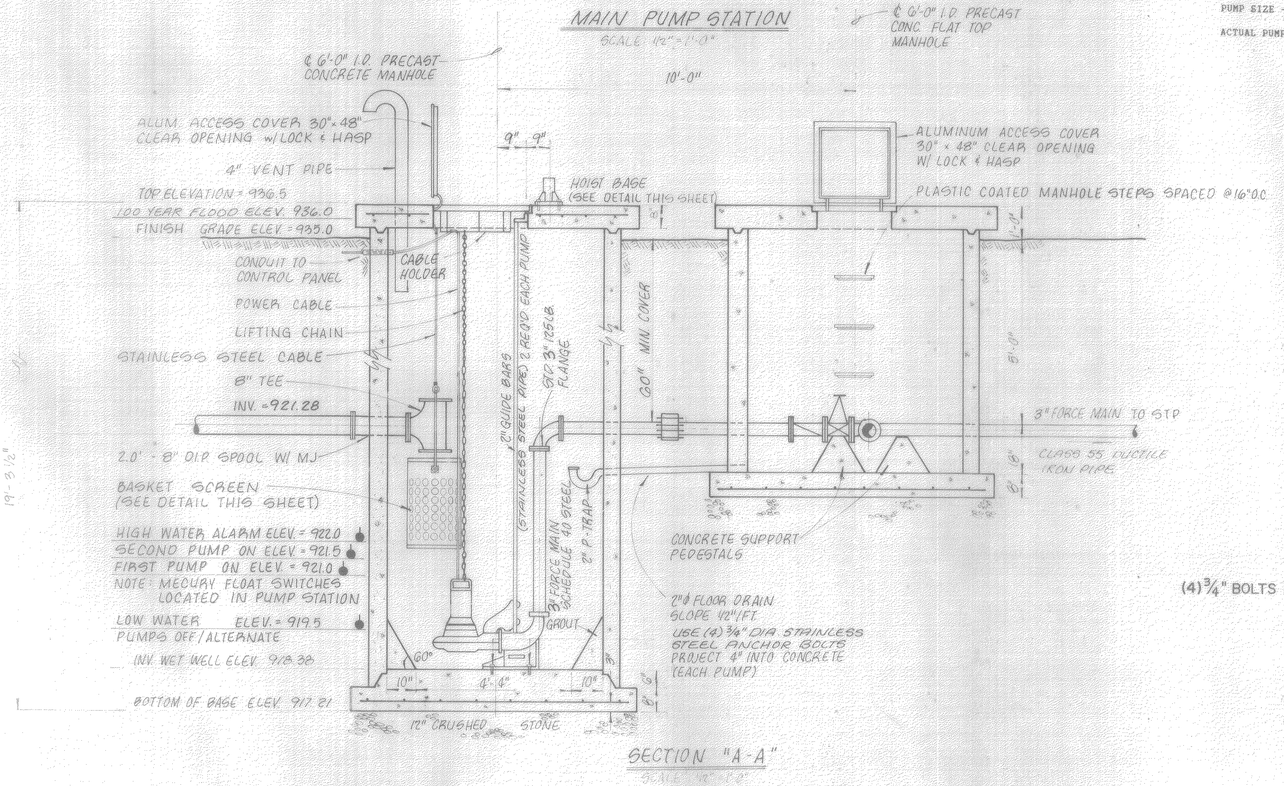



## DIFFUSER ASSEMBLY

NOT TO SCALE

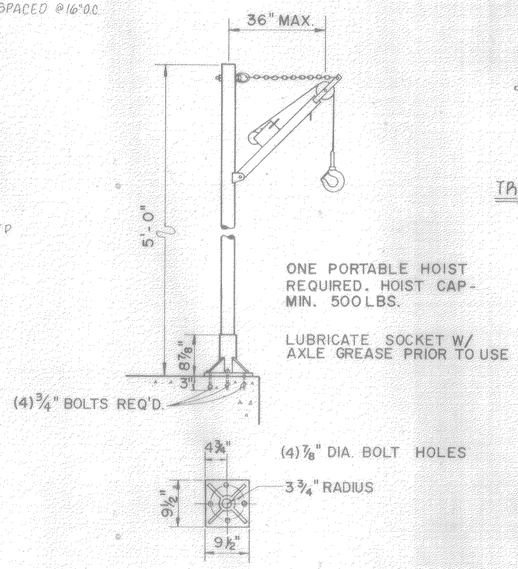



## SECTION "A-A"

SCALE: 1/2" = 1'-0"

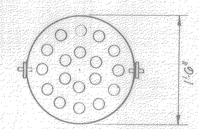



ONE PORTABLE HOIST REQUIRED. HOIST CAP- MIN. 500 LBS.

LUBRICATE SOCKET W/ AXLE GREASE PRIOR TO USE

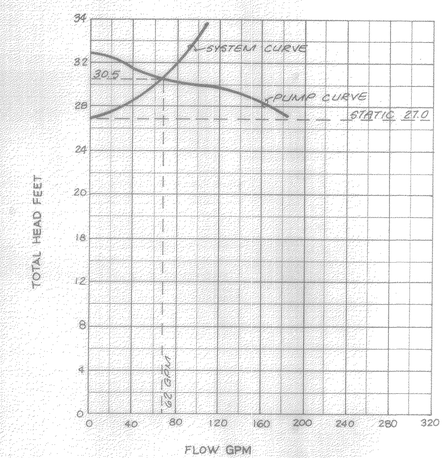
## PORTABLE HOIST

NOT TO SCALE




## TRASH BASKET DETAIL

SCALE: 1" = 1'-0"




## PUMP CURVE MAIN PUMP STATION

6-7-91 REV. FORCE MAIN SIZE (4" TO 3") TAP

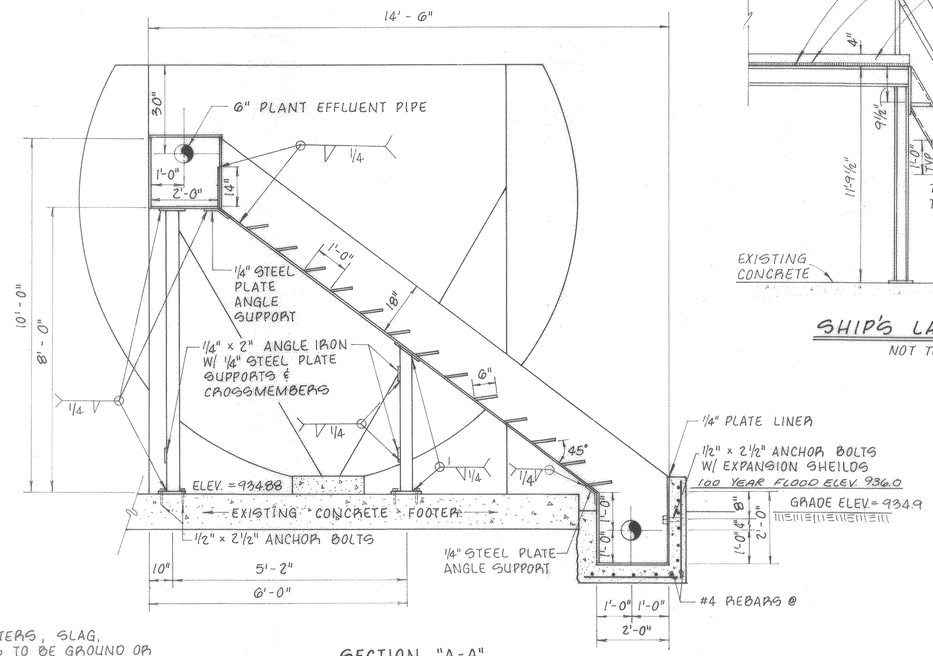
| | |
|---|---|
| Designed: WGP | **Clean Water Engineers, Inc.** |
| Drafted: JRM | Fincastle, Virginia |
| Checked: CCB | |
| Approved: JMD | |

COMMUNITY OF EAGLE ROCK
WASTEWATER COLLECTION AND TREATMENT SYSTEM
BOTETOURT COUNTY, VIRGINIA

CONTRACT I
"AS BUILT"

COMMONWEALTH OF VIRGINIA
DAVID J. RIGBY
No. 8169
REGISTERED PROFESSIONAL ENGINEER

| | |
|---|---|
| Sheet: 14 of 19 | |
| Scale: AS SHOWN | |
| Date: DEC. 1987 | |
| Project: 86019 | |



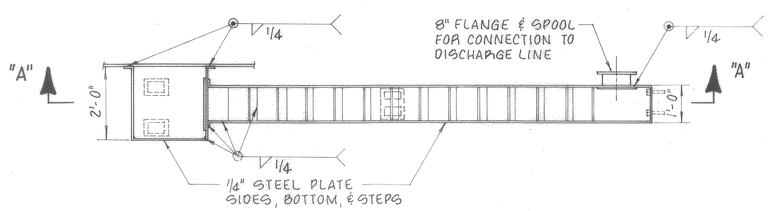

SECTION "A-A"

NOTES:

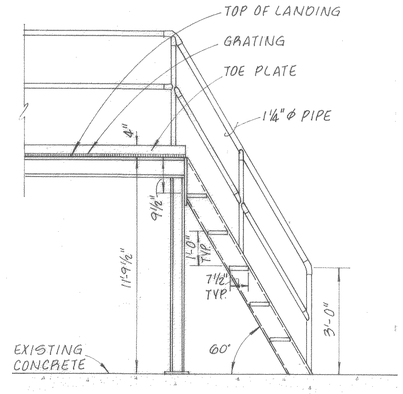
1. ALL WELD SPATTERS, SLAG, & SHARP EDGES TO BE GROUND OR CHIPPED SMOOTH.
2. CONTRACTOR'S OPTION ON FIELD PRIMING & PAINTING. SEE SPECS. FOR PAINTING REQUIREMENTS
3. CASCADE STEPS TO BE CONTINUOUS WELD TO SIDES AND BOTTOM
4. CASCADE SHOP FABRICATED AND FIELD ERECTED
5. HOLES FOR EACH ANCHOR BOLT TO BE BORED SIMULTANEOUSLY THROUGH ALL MATERIALS

AERATION CASCADE

NOT TO SCALE

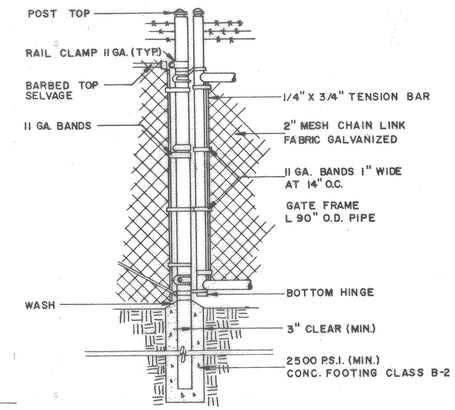



PLAN



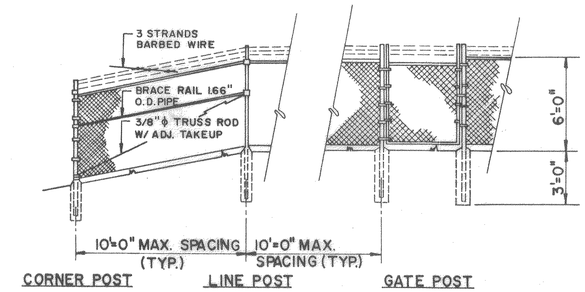

SHIP'S LADDER DETAIL

NOT TO SCALE




GATE DETAIL

NOT TO SCALE




CHAIN LINK FENCE DETAIL

NOT TO SCALE

EQUIPMENT SCHEDULE

| ITEM | QUANTITY | MANUFACTURER | MODEL NO. |
|---|---|---|---|
| Water Heater | 1 | Chronomite | S23,11/220V, 1Ø 21 Amp, 2300 Watt |
| Lavoratory | 1 | American Std. | Ledgemere, P5300-40 w/NZ2109 Trim & Towel Racks on Slides |
| Toilet | 1 | American Std. | Instanto, F2510-8 Toilet Combination |
| Exterior Door | 1 | Fenestra | Presidential 3068-G3 |
| Unit Heater | 1 | Chromalox | MUH-05-8 W/MMB-5 Wall Bracket |
| Exhaust Fan | 1 | Broan | 676 |
| Backflow Preventer | 1 | Watts | Regulator, 1" Model 909 |
| Windows | 1 | Pella | Std. Clad Awning 9'3-1/2"x2'5-3/4" Model No. 3224CA31 |
| | 1 | Pella | Std. Clad Casement 3',6-1/2" x 2',9-3/4", Model No. 1628CC2 |
| Yard Lights | 2 | Sylvania | MTH-150-HPS-5P-230-A-259-1 A363 W/Built-in Photo-cell and 22" aluminum mast arm |
| Lighting | 4 | Lithonia | LB440, Surface Mtd |
| | 1 | Sylvania | AK3-P-70HPS Wall surface mtd 120-H-PC |
| Lighting | 2 | Markstone | HPS W4953, Surface mounted in over-hang w/freshner lens |
| | 1 | Prescolite | 9316, Surface mounted in attic space |
| Cabinets | 40 sq ft | Merillat | |
| Hypochorite System | 1 | B/F | As Shown |
| Stool | 1 | Hamilton | 950M478 |
| Dry Chemical Fire Extinguisher | 1 | Lab Safety Supply | B1123 |
| First Aid Kit | 1 | Johnson & Johnson | B3244 |

LAB EQUIPMENT

| ITEM | QUANTITY | MANUFACTURER | MODEL NO. |
|---|---|---|---|
| Centrifuge | 1 | Raven | F10300 |
| Centrifuge Tubes | 12 | Raven | B10101 |
| DPD-Chlorine Test Kit | 1 | HACH | CN-70 |
| Dissolved Oxygen Meter | 1 | YSI | 51B |
| Dissolved Oxygen Probe | 1 | YSI | 5739 |
| Dissolved Oxygen Probe Cable | 1 | YSI | 5740 |
| Sludge Blanket Detector (Core Tacker) | 1 | Raven | B10104 |
| Settlometer | | Raven | C10102 |
| Refrigerator 6.0 cu.ft. | 1 | Sears | 46 MR 96608N |
| pH Meter | 1 | Analytical Measurements | Model 707 |
| 4.0 Buffer Solution | 1 | Fisher | SB101-500 |
| 7.0 Buffer Solution | 1 | Fisher | SB107-500 |
| 10.0 Buffer Solution | 1 | Fisher | SB115-500 |

Laboratory Containers:

| ITEM | QUANTITY | MANUFACTURER | * MODEL NO. |
|---|---|---|---|
| Wash Bottles | 6 (1 case) | Fisher | 03-409-22A |
| 2 liter Sample Containers | 6 (1 case) | Nalgene | 11-815-11A |
| 250 ml Sample Containers | 72 (1 case) | Nalgene | 02-893B |
| 1000 ml Beakers | 6 | Fisher | 02-540P |
| 600 ml Beakers | 6 | Fisher | 02-540M |
| 100 ml Beakers | 12 | Fisher | 02-540H |
| 50 ml Beakers | 12 | Fisher | 02-540G |

*All Model Nos. are Fisher Catalog Nos.

| | |
|---|---|
| Designed: | WGP |
| Drafted: | TAM |
| Checked: | CCB |
| Approved: | JMD |

**Clean Water Engineers, Inc.**

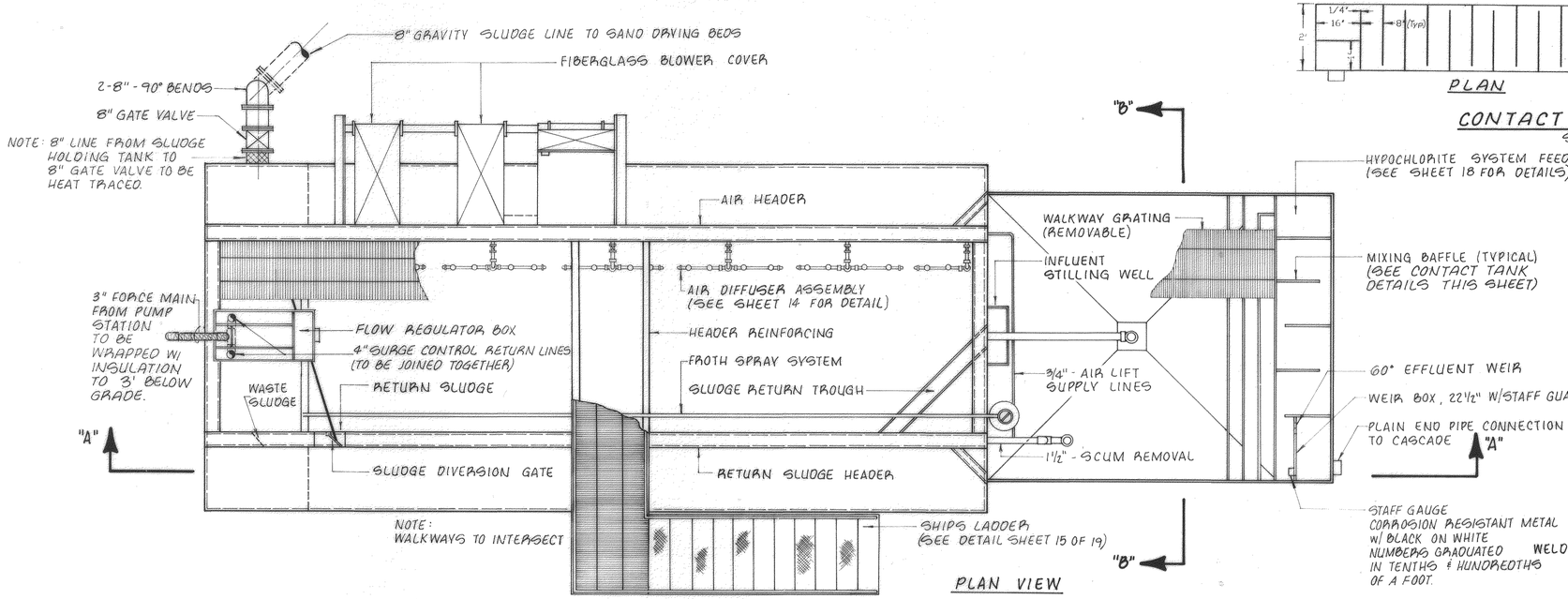
Fincastle, Virginia

COMMUNITY OF EAGLE ROCK
WASTEWATER COLLECTION AND TREATMENT SYSTEM
BOTETOURT COUNTY, VIRGINIA

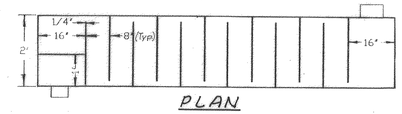
CONTRACT I
"AS BUILT"

COMMONWEALTH OF VIRGINIA
DAVID J. RIGBY
No. 8169
CERTIFIED PROFESSIONAL ENGINEER

| | |
|---|---|
| Sheet: | 15 of 19 |
| Scale: | AS SHOWN |
| Date: | DEC. 1987 |
| Project: | 86019 |



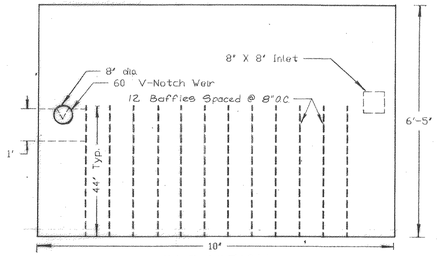

PLAN VIEW



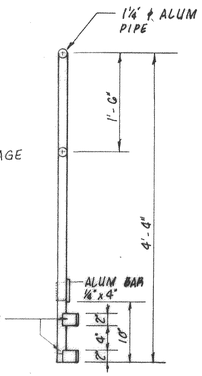

PLAN

CONTACT TANK DETAILS

Scale: 1/2" = 1'-0"

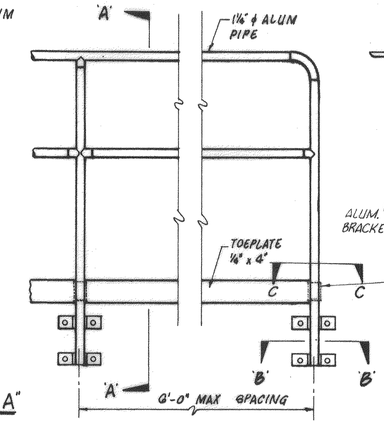



ELEVATION



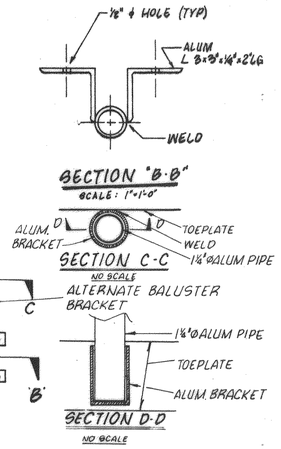

SECTION "A-A"

SCALE: 1" = 1'-0"




TYPICAL HANDRAIL DETAIL

SCALE: 1" = 1'-0"




SECTION "B-B"

SCALE: 1" = 1'-0"

SECTION C-C

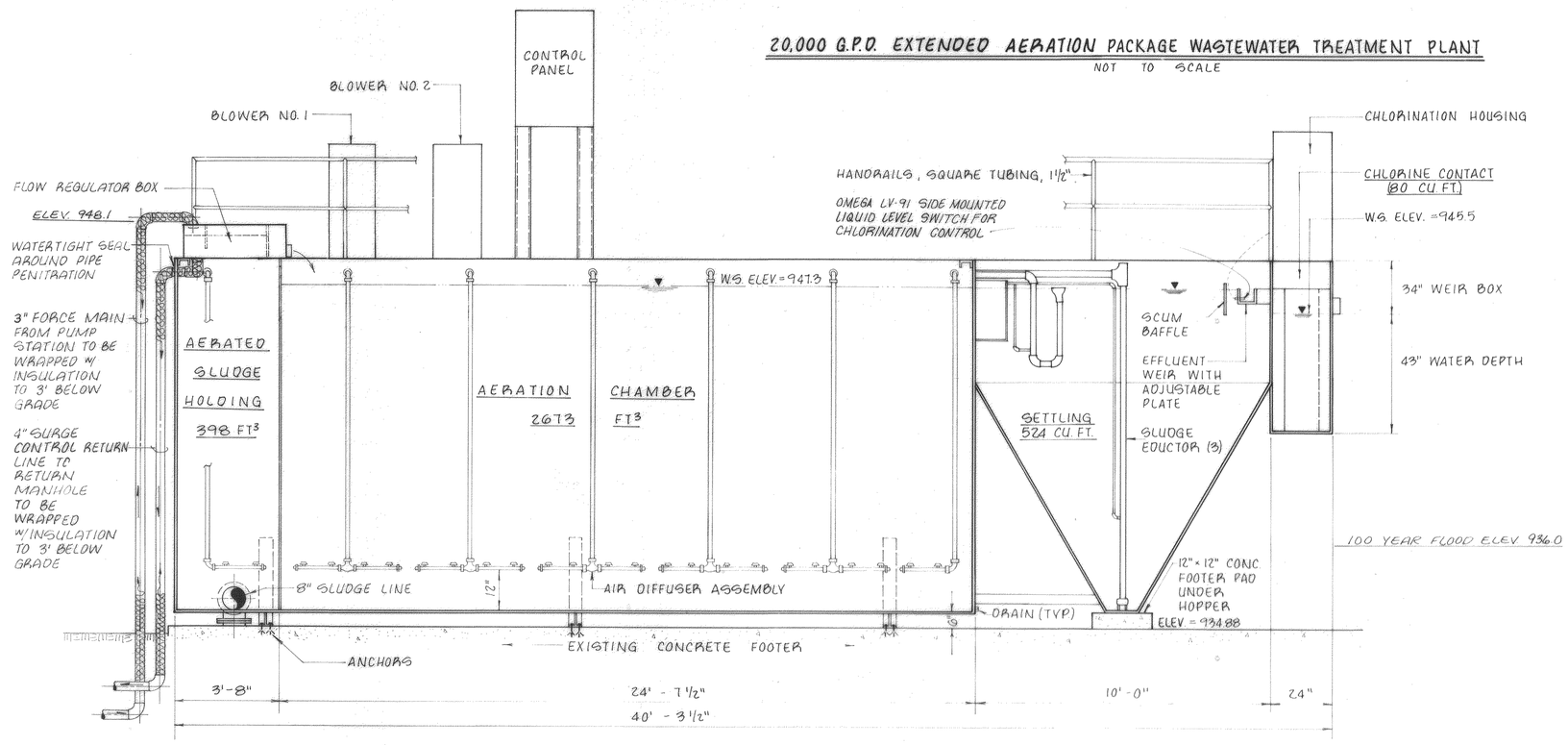
NO SCALE

SECTION D-D

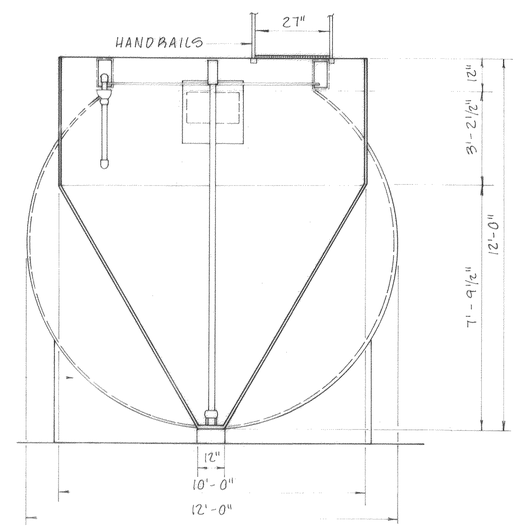
NO SCALE

20,000 G.P.D. EXTENDED AERATION PACKAGE WASTEWATER TREATMENT PLANT

NOT TO SCALE




SECTION "A-A"

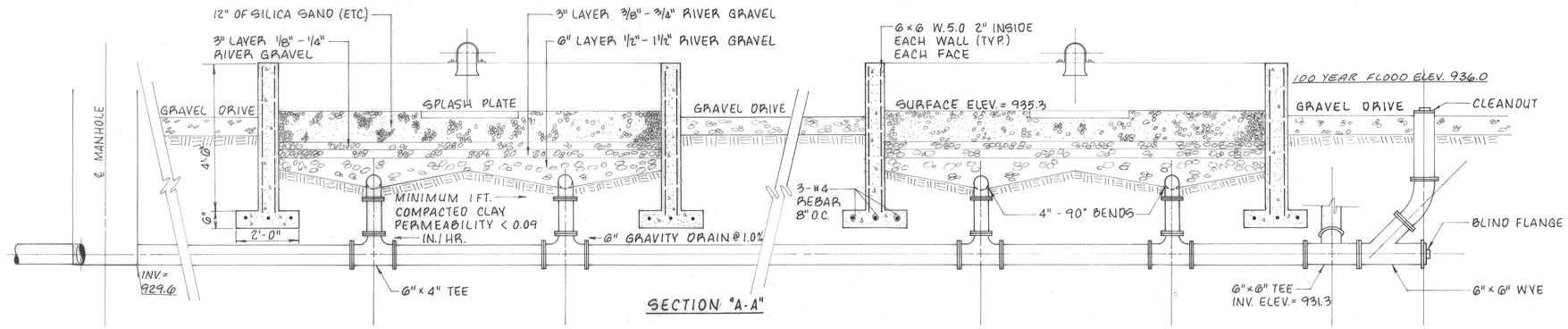



SECTION "B-B"

6-7-91 REV. FORCE MAIN SIZE (4" TO 3") TAP

| | | | |
|---|---|---|---|
| Designed: WGP | **Clean Water Engineers, Inc.** | COMMUNITY OF EAGLE ROCK | CONTRACT I "AS BUILT" |
| Drafted: TAM | Fincastle, Virginia | WASTEWATER COLLECTION AND TREATMENT SYSTEM | Sheet: 16 of 19 |
| Checked: CCB | | BOTETOURT COUNTY, VIRGINIA | Scale: AS SHOWN |
| Approved: JMD | | | Date: DEC. 1987 |
| | | | Project: 86019 |

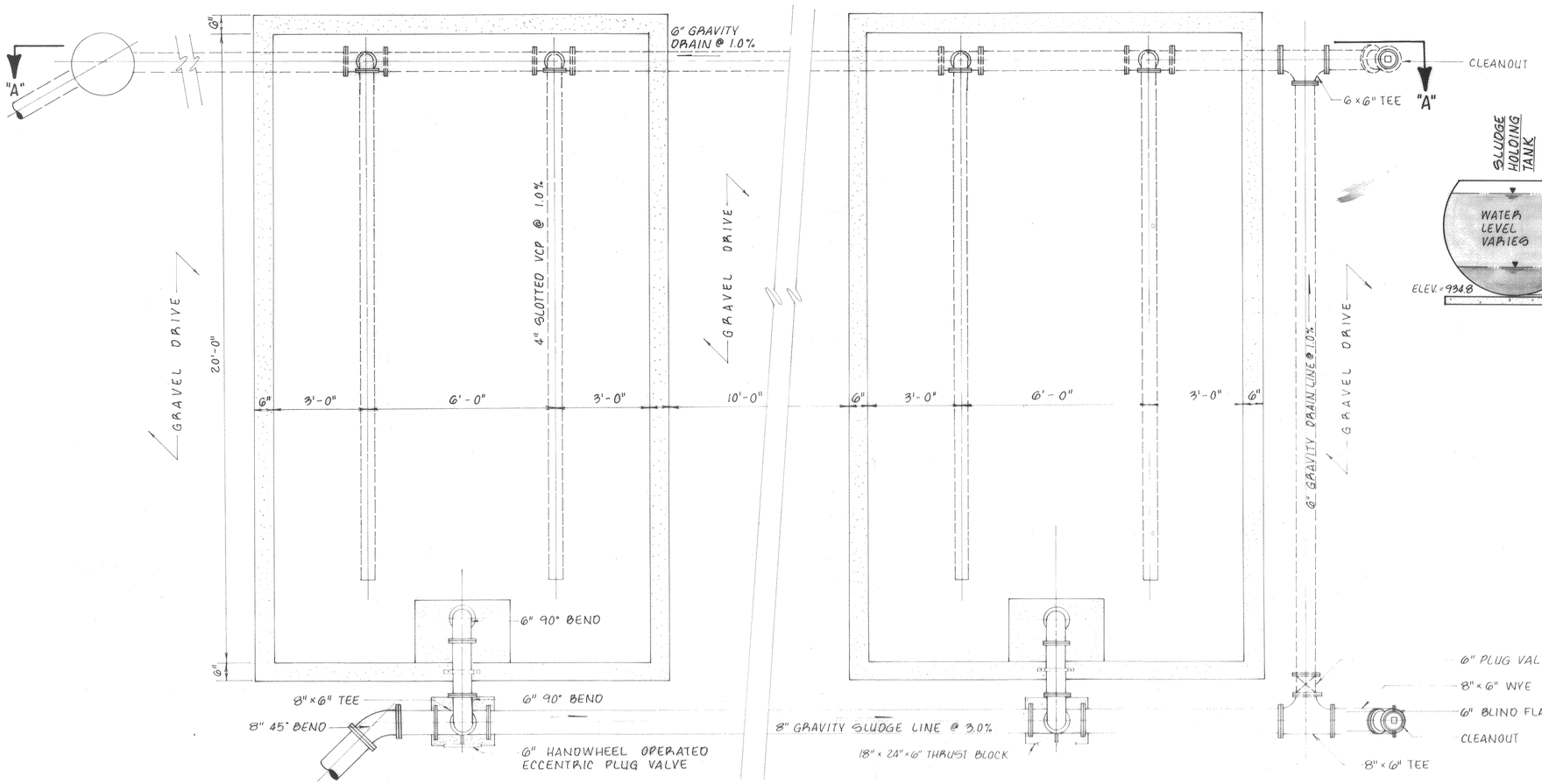
DAVID J. RIGBY 8169 VIRGINIA PROFESSIONAL ENGINEER



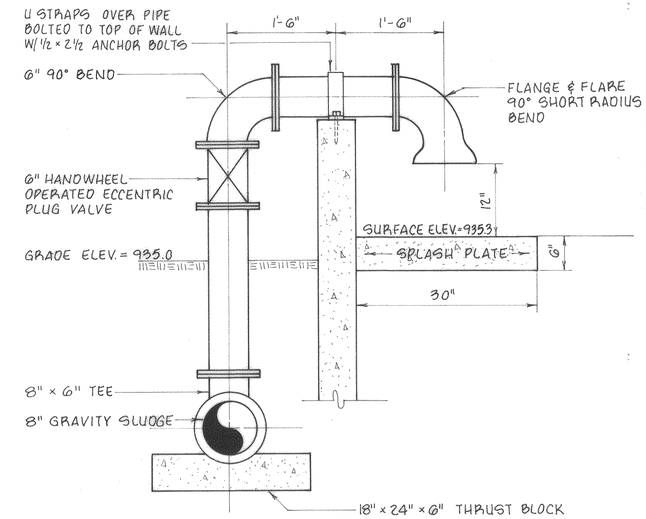

SECTION "A-A"

## SAND DRYING BEDS

SCALE: 1/2" = 1'-0"

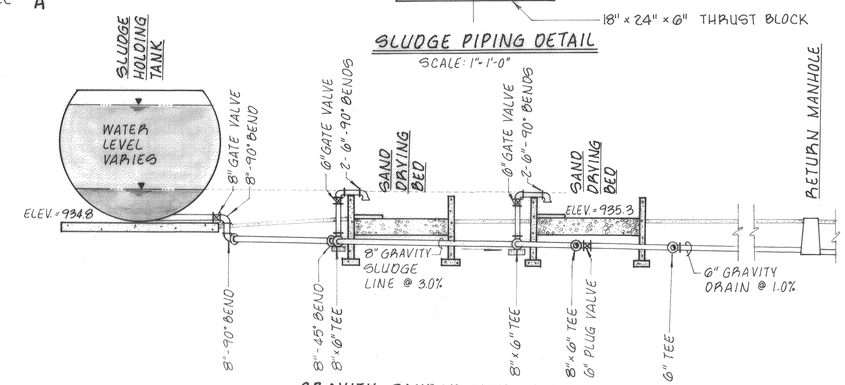



PLAN VIEW



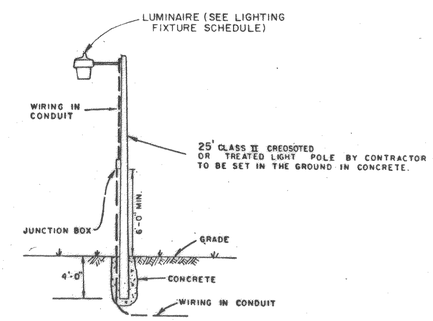

## SLUDGE PIPING DETAIL

SCALE: 1" = 1'-0"




## GRAVITY SLUDGE LINE PROFILE

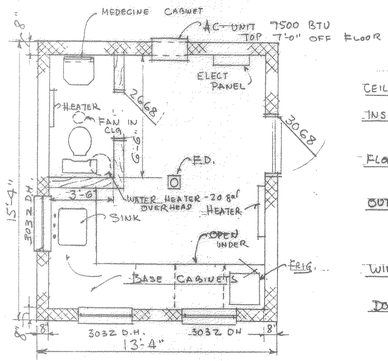
NOT TO SCALE




## LIGHT POLE DETAIL

NTS

| | | | |
|---|---|---|---|
| Designed: WGP | **Clean Water Engineers, Inc.** | COMMUNITY OF EAGLE ROCK | CONTRACT I "AS BUILT" |
| Drafted: CCB/TAM | Fincastle, Virginia | WASTEWATER COLLECTION AND TREATMENT SYSTEM | COMMONWEALTH OF VIRGINIA — DAVID J. RIGBY No. 8169 — CERTIFIED PROFESSIONAL ENGINEER |
| Checked: WEP | | BOTETOURT COUNTY, VIRGINIA | Sheet: 17 of 19 |
| Approved: JMD | | | Scale: AS SHOWN |
| | | | Date: DEC. 1987 |
| | | | Project: 86019 |




PLAN
1/4" = 1'-0"

## NOTES

CEILING - 1/2" AC PLYWOOD
6" FOIL BACKED INSUL.

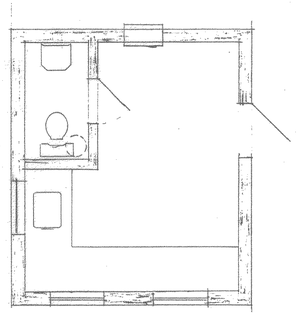
INSIDE TOILET WALLS
2x4 STUDS @ 16" O.C.
1/2" AC. PLYWOOD BOTH SIDES

FLOOR 4" CONC. 6x6 - W1.4 x W1.4 MESH ON 4 MILL POLY ON 4" STONE FILL

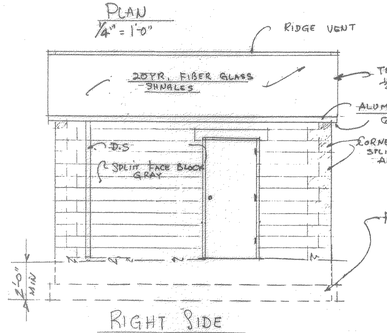
OUTSIDE WALLS
8" L.W. MASONRY UNITS
SPLIT FACED FINISH
CEDAR AS NOTED
FILL VOIDS WITH ZONOLITE

WINDOWS ANDERSON D.H.
BROWN CLAD
INSULATED GLASS

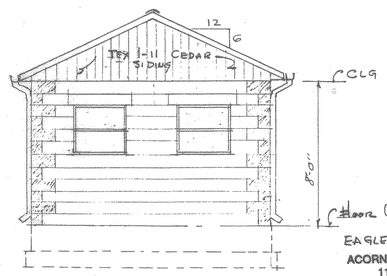
DOORS 2668 - 1 3/8 MASONITE HOLLOW CORE - WOOD FR.
3068 - 1 3/4 HM with HM FRAME



ELECTRICAL
1/4" = 1'-0"




RIGHT SIDE
1/4" = 1'-0"




FRONT
1/4" = 1'-0"

EAGLE ROCK WWTP
ACORN CONSTRUCTION LTD.
117 Lee Highway S.
P. O. Box 625
Troutville, VA 24175
8-20-91

EAGLE ROCK WWTP
ACORN CONSTRUCTION LTD.
117 Lee Highway S.
P. O. Box 625
Troutville, VA 24175
8-20-91

| CIRCUIT NO. | DESCRIPTION OF LOAD SERVED | SPACE NO. | BREAKER POLES | WIRE SIZE | PHASE AMPS ϕA | ϕB | ϕC | WIRE SIZE | BREAKER POLES | SPACE NO. | DESCRIPTION OF LOAD SERVED | CIRCUIT NO. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | | 10 | 21 | | | | | 2 | | |
| 1 | 3 HP (2) INFLUENT PUMPS | 3 | 20/3 | 10 | | 21 | | 10 | 20/3 | 4 | 3 HP (2) BLOWER MOTORS | 2 |
| | | 5 | | 10 | | | 21 | 10 | | 6 | | |
| 3 | LIGHTS ON POLES | 7 | 20/1 | 12 | 2.5 | | | | | 8 | SPACE FOR FUTURE BLOWER MOTORS | 4 |
| 5 | RECPTS. weatherproof & outside | 9 | | | | 4.5 | | | | 10 | | |
| | | 11 | | | | | 14 | | | 12 | | |
| 7 | UNIT HEATER 5 KW | 13 | 20/3 | | 14 | | | | | 14 | IN-LINE HTR. (2500 W) | 6 |
| | | 15 | | | | 14 | | | | 16 | LTGS & EX. FAN IN CTRL BLD | 8 |
| 9 | RECPTS. (Plug Strip) | 17 | 20/1 | 12 | | | 1.5 | | | 18 | EXTERIOR BLD. LTGS. | 10 |
| 11 | RECPTS. (Plug Strip) | 19 | 20/1 | 12 | 1.5 | | 2.5 | | | 20 | | |
| 13 | RECPTS. (Plug Strip) | 21 | 20/1 | 12 | | 1.5 | | | | 22 | | |
| | | 23 | | | | | | | | 24 | | |
| | | 25 | | | | | | | | 26 | | |
| | | 27 | | | | | | | | 28 | | |
| | | 29 | | | | | | | | 30 | | |

PANELBOARD (PBD) "MPB"

225 AMPS, 200 A MN BRK, 120/208 VOLT, 3 ϕ, 30 SPACES, NEMA 1, SURF MTD.

## ELECTRICAL NOTES AND SPECIFICATIONS

1. INSTALLATION SHALL BE IN STRICT COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE, AND MANDATES OF THE LOCAL BUILDING OFFICIALS.
2. THE GENERAL ARRANGEMENT AND LOCATIONS OF LIGHT FIXTURES. EQUIPMENT, ETC. ARE INDICATED BY THE DRAWINGS AND SHALL BE INSTALLED IN ACCORDANCE THEREWITH, WITH THE EXCEPTION OF SUCH CHANGES WHICH MAY BE NECESSARY ON ACCOUNT OF OTHER TRADES. CONTRACTOR SHALL COORDINATE WORK WITH INSTALLATION OF OTHER SUBCONTRACTORS AND OWNER SUPPLIED EQUIPMENT AND FURNISHINGS.
3. ELECTRICAL WORK SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR AS TO SCHEDULING, DIMENSIONING AND LOCATION OF EQUIPMENT.
4. MAJOR ITEMS ARE SHOWN ON THE PROJECT PLANS. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL INCIDENTAL ITEMS REQUIRED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM.
5. WIRE SHALL BE COPPER OF MINIMUM OF 12 GAUGE SIZE AND SHALL BE TYPE THW, THWN, THHN, RH OR RHW AND STRANDED IF NUMBER 8 AWG OR LARGER.
6. ALL WIRING SHALL BE IN CONDUIT. RIGID METAL WHERE EXPOSED BELOW SWITCH HEIGHT, EMT ABOVE SWITCH HEIGHT OR IN CONCEALED LOCATIONS, FLEXIBLE CONDUIT FOR MOTOR CONNECTIONS AND PVC SCHEDULE 40 FOR UNDERGROUND APPLICATIONS.
7. ALL CONDUIT SYSTEMS, EQUIPMENT CASES, MOTOR FRAMES AND SYSTEM NEUTRAL CONDUCTORS SHALL BE PERMANENTLY AND EFFECTIVELY GROUNDED IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE, ARTICLE 250.
8. INSTALLATION OF LIGHT FIXTURES SHALL BE COORDINATED WITH CEILING LAYOUT, STRUCTURAL MEMBERS AND ADJACENT FINISHES.
9. INSTALL CONDUITS WITH NO MORE THAN THREE CURRENT CARRYING CONDUCTORS PLUS A NEUTRAL CONDUCTOR, PLUS A GROUND CONDUCTOR WHERE REQUIRED.
10. WHERE MORE THAN THREE CURRENT CARRYING CONDUCTORS ARE CONTAINED IN A SINGLE CONDUIT, ADJUST CONDUCTOR SIZES AS NECESSARY TO ACCOUNT FOR DE-RATING THEIR AMPACITY IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
11. ELECTRICAL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF POWER WIRING TO ALL EQUIPMENT.
12. ELECTRICAL SUBCONTRACTOR RESPONSIBLE FOR COORDINATING AND OBTAINING 3 PHASE SERVICE FROM ELECTRIC POWER COMPANY FOR 120/208 VOLT, 3 PHASE 4W Wye.
13. CONDUIT TO BE RUN CONCEALED WITHIN CONTROL BUILDING WITH THE EXCEPTION OF WIRING AT THE MAIN SURFACE MOUNTED SWITCHGEAR.
14. TELEPHONE OUTLETS SHALL BE EQUIPPED WITH 2-1/8" X 4" X 2-1/8" DP. WALL BOX AND COVERPLATE WITH EMPTY 3/4" CONDUIT EXTENDED CONCEALED INWALL TO AN ACCESSIBLE LOCATION ABOVE THE CEILING.
15. WIRING DEVICES TO BE AS SCHEDULED BELOW:

| DEVICE | MARK | DESCRIPTION |
|---|---|---|
| DUPLEX RECEPTACLE | ⊕ | 20 A SPECIFICATION GRADE, BROWN WITH #302 S.S. PLATES IN CONTROL BUILDING AND GALV. PLATES OTHERWISE |
| SWITCHES | $ | 20 A, SIDEWIRED, SPECIFICATION GRADE, BROWN WITH #302 S.S. PLATES IN CONTROL BUILDING AND GALV. PLATES OTHERWISE. |
| TELEPHONE OUTLET | ▼ | #302 S.S. COVER WITH SINGLE CENTER HOLE, 2-1/8" X 4" X 2-1/8" BACK BOX & EMPTY 3/4 CONDUIT TO ACCESSIBLE LOCATION. |
| TWO POLE | ▽ | AS REQUIRED TO SUIT EQUIPMENT REQUIREMENTS. |
| WEATHERPROOF RECEPTACLE | ⊕ WP | HUBBELL 5206WD CAST ALUMINUM WITH TYPE F.S. BOX |

16. ALL SAFETY SWITCHES TO BE SIMILAR OR EQUAL TO SQUARE D, HEAVY DUTY H SERIES.
17. ALL PANELBOARDS TO BE SIMILAR OR EQUAL TO SQUARE D SERIES NQOD WITH BOLT ON TYPE CIRCUIT BREAKERS.
18. ENGRAVED PLASTIC LAMINATE IDENTIFICATION PLATES SHALL BE PROVIDED FOR ALL DISCONNECT SWITCHES, PANELBOARDS, USING ENGRAVERS STOCK MELAMINE PLASTIC, BLACK WITH 1/3" HIGH WHITE CORE LETTERING. CONTRACTOR TO SUBMIT SCHEDULE OF INTENDED LABELING PRIOR TO ORDERING NAME PLATES.

## EQUIPMENT SCHEDULE

| ITEM | MANUFACTURER | MODEL NO. |
|---|---|---|
| Laboratory | Fisher Scientific | |
| | Benches (1) | 97-790-Q |
| | Benches (1) | 97-69A-E |
| | Bench (2)<br>Bench (1)<br>Counter Top | 97-325-Q<br>97-250-Q<br>Epoxyn-Stycea-Lipped |
| | File Cabinet (1)<br>Desk<br>Desk Chair (2)<br>Refrigerator | 91-241<br>91-203<br>91-225<br>13-988-105 |
| Toilet Shower | American Standard<br>Cutler Metal Products | "Cadet" F-2122-11<br>A32K-32"x32"x8" with Curtain |
| Front Door | Fenestra | Presidential" 3068-G3 |
| Interior Door | Georgia Pacific | "Vinyl Shield" Maple Left Hand Swing 1-3/8x2'-4"x6'-8" and Jamb |
| Heater-Thru Wall Unit | Carrier | 52AWA5143RC, 14 MBH CLG, 5KW Elec. Heat, 240V, remote control thermostat, wall sleeve, architectural wall grille, Type "C" receptacle, wall thermostat |
| Back Flow Preventer | Watts Regulator | 1" Model 909 |
| Windows | Andersen | Awning 4'x4', Type A-42 |

| ITEM | MANUFACTURER | MODEL NO. |
|---|---|---|
| Water Heater | Sears, Roebuck & Co. | 35 gallon |
| Ceiling Tile | Owens/Corning | Pin Perforated 5/8" x 12" x 12" |
| Lavatory | American Standard | F350-40 With N2141-8 Trim and Towel Racks on Slides |
| Lighting | 1. Lithonia | L240, #2, 40 watts, type F40, 120 Volts, surface mounting, std. industrial with reflector |
| | 2. Sylvania | AM3-P-70HPS, 120-H-RC, #1 70 watts, Type HPS, 120 volts, wall mounting, built in photocell on blower bldg. on vert. wall mount |
| | 3. Lithonia | LB440, #4, 40 Watts, Type F40, 120 volts, surface mounting, low profile, wraparound, 15-3/8" wide |
| | 4. Brown | Model 657, #1, 100 Watts, Incandescent, 120 Volts, Recessed, 70 CFM fan, 4" diameter duct discharge |
| | 5. Prescolite | Model CFX-4, #1, 75 watts, Incandescent, 120 volts, surface mounting, cast aluminum, Lexan lens, Gasketed |
| Yard Light | Sylvania | MTH-150 HPS, SP-230-A259-A363, #1, 150 Watts, Type HPS, 230 volts, pole mounting, built in photocell, 22" aluminum mast arm |

NOTE: CONTROL BUILDING WAS DESIGNED AND CONSTRUCTED BY ACORN CONSTRUCTION LTD. IN AGREEMENT WITH BOTETOUT CO. PUBLIC WORKS DIRECTOR BONNIE NEWLON.

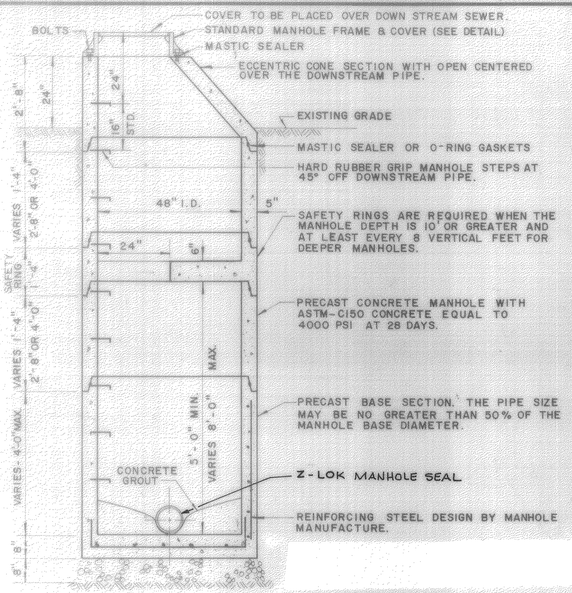
CLEAN WATER ENGINEERS, INC.
P.O. BOX 2B
FINCASTLE, VIRGINIA 24090

COMMUNITY OF EAGLE ROCK
WASTEWATER COLLECTION AND TREATMENT SYSTEM
BOTETOURT COUNTY, VIRGINIA

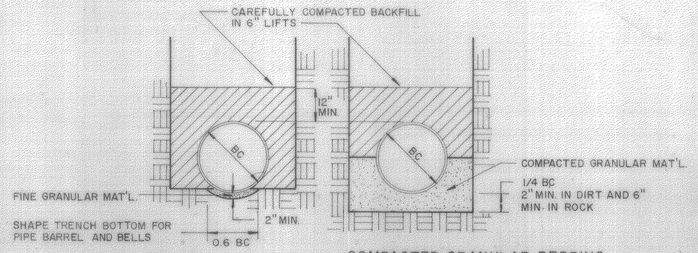
CONTRACT I
"AS BUILT"

| REVISIONS | | |
|---|---|---|
| NO. | DATE | BY |

| | |
|---|---|
| DESIGNED: JAF | SHEET: 18 OF 19 |
| DRAWN: TAP | SCALE: AS SHOWN |
| CHECKED: JAF | DATE: JUNE, 1991 |
| APPROVED: DJR | PROJECT: 86019 |




## PRECAST ECCENTRIC MANHOLE

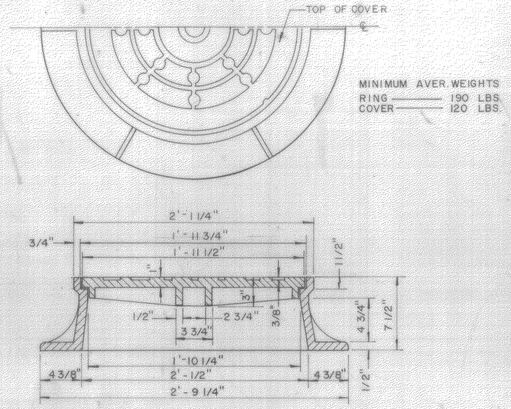



SHAPED BOTTOM W/ TAMPED BACKFILL (MAY BE USED WITH DUCTILE IRON PIPE IN CLEAN EARTH ONLY)

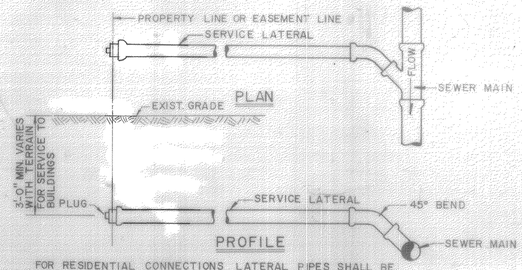
COMPACTED GRANULAR BEDDING TO BE USED W/ FLEXIBLE PIPE (OR WHEN IN ROCK)

## BEDDING DETAIL

FIRST CLASS—CLASS B BEDDING

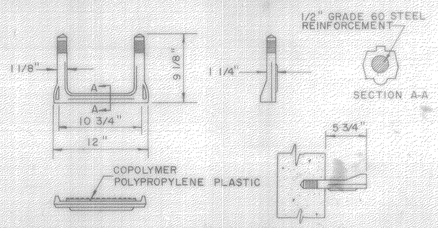



## STANDARD MANHOLE COVER

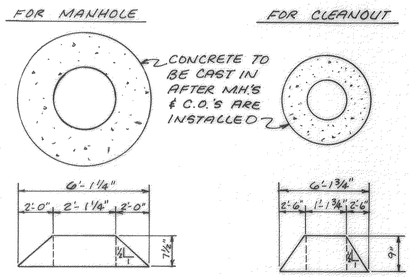



FOR RESIDENTIAL CONNECTIONS LATERAL PIPES SHALL BE 4" DIA. FOR COMMERCIAL CONNECTIONS THE LATERAL SIZE SHALL BE SPECIFIED ON THE PLANS BY THE ENGINEER.

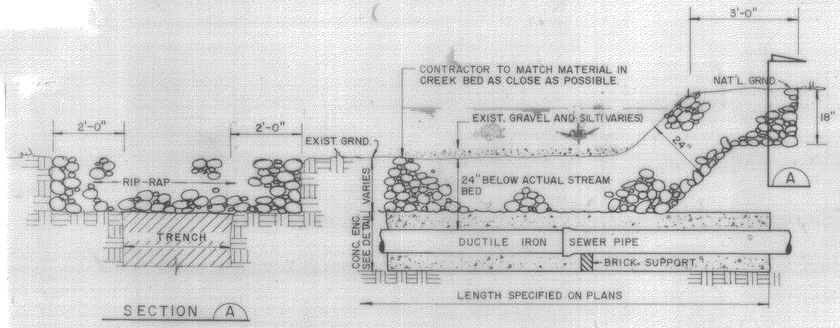
## TYPICAL SERVICE CONNECTION




## MANHOLE STEP DETAIL

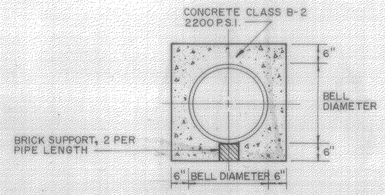



CONCRETE PROTECTIVE RING

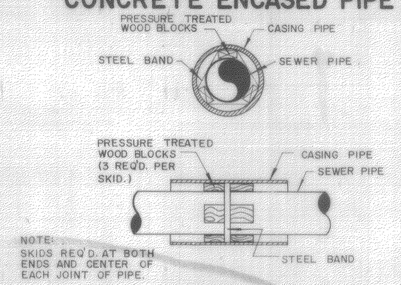



NOTE: AFTER CONSTR. OF EACH CREEK CROSSING THE LINES SHALL BE TESTED FOR INFILTRATION IN ACCORDANCE WITH THE SPECIFICATIONS WITH ZERO INFILTRATION. SHOULD INFILTRATION BE PRESENT, THE CONTRACTOR SHALL RECONSTRUCT THE CROSSING UNTIL ZERO INFILTRATION IS OBTAINED.

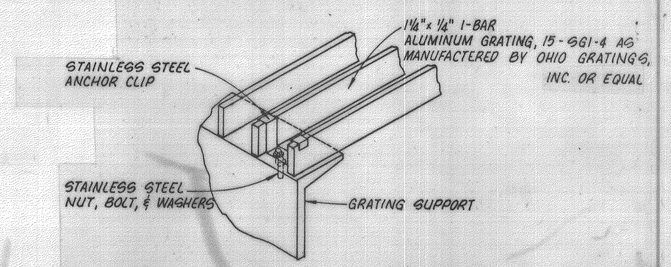
## TYPICAL CREEK CROSSING AND BANK PROTECTION




## CONCRETE ENCASED PIPE

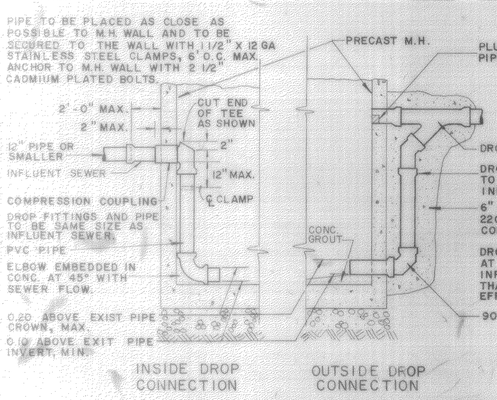



## SKID DETAIL

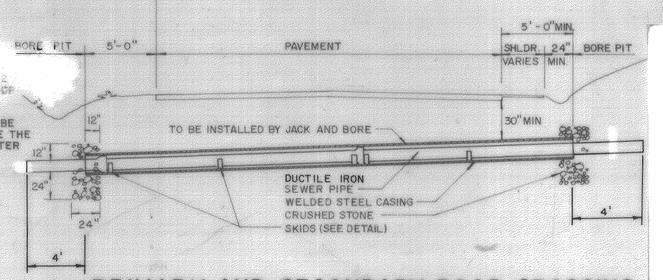



## TYPICAL GRATING MOUNTING DETAIL

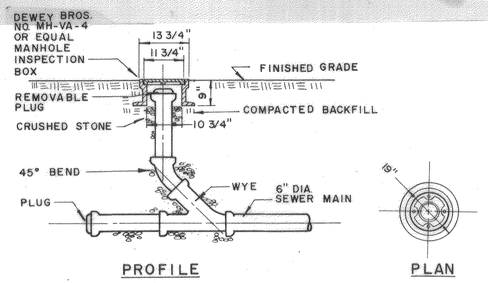
NOT TO SCALE



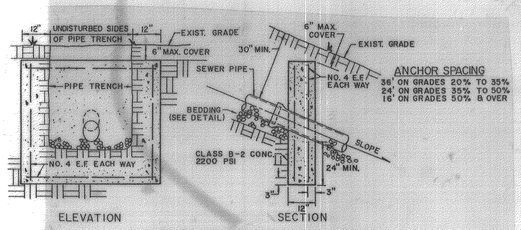

## DROP CONSTRUCTION AT STANDARD MANHOLE




## PRIMARY AND SECONDARY ROAD CROSSING



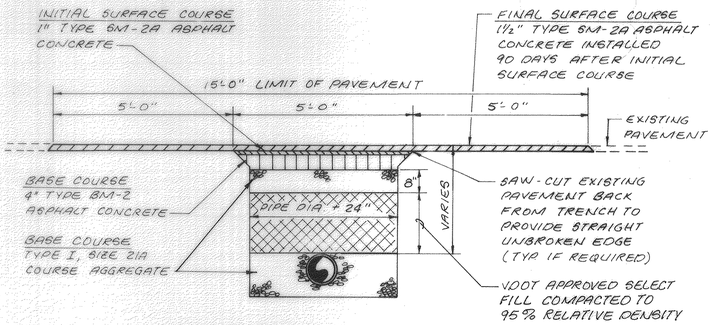

## CLEANOUT



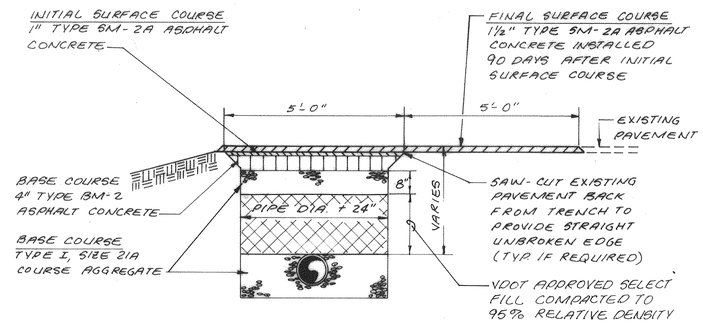

## CONCRETE ANCHOR DETAIL

SEWER DETAILS

| | | | |
|---|---|---|---|
| Designed: DJR | **Clean Water Engineers, Inc.** | COMMUNITY OF EAGLE ROCK | CONTRACT I "AS BUILT" |
| Drafted: CFA | Fincastle, Virginia | WASTEWATER COLLECTION AND TREATMENT SYSTEM | COMMONWEALTH OF VIRGINIA — DAVID J. RIGBY — No. 8169 — CERTIFIED PROFESSIONAL ENGINEER |
| Checked: JMD | | BOTETOURT COUNTY, VIRGINIA | Sheet: 19 of 19 |
| Approved: DJR | | | Scale: NONE |
| | | | Date: DEC. 1987 |
| | | | Project: 86019 |

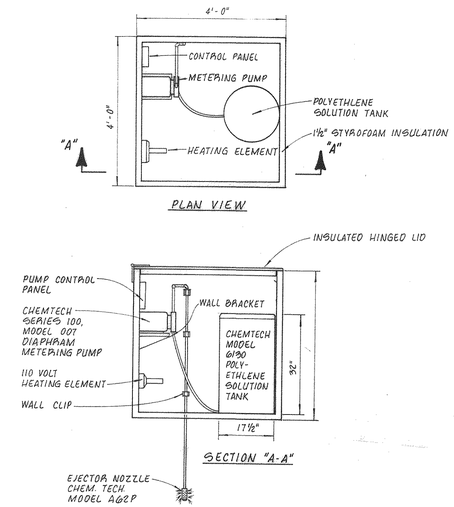



**ASPHALT CONCRETE PAVEMENT**
RECONSTRUCTION DETAIL:
PIPE TRENCH CROSSING ROADWAY
SCALE: ½" = 1'-0"
SEE NOTE 1

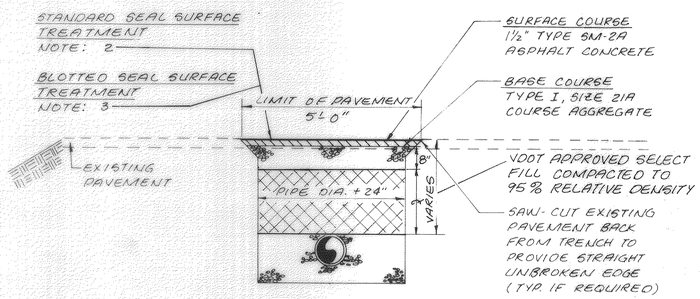



**ASPHALT CONCRETE PAVEMENT**
RECONSTRUCTION DETAIL:
PIPE TRENCH PARALLELING ROADWAY
SCALE: ½" = 1'-0"
SEE NOTE 1

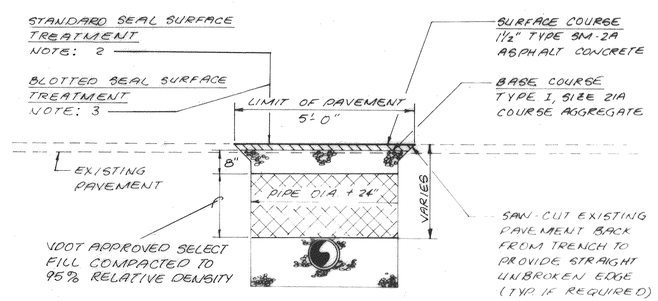
NOTE: FOR TRENCH CENTERLINE OUTSIDE PAVEMENT BUT WITHIN 4' OF THE EDGE OF PAVEMENT, THE LIMIT OF PAVEMENT WILL BE DISTANCE TO CENTERLINE + 5'-0". FOR ALL TRENCHES OVER 4' FROM THE EDGE OF PAVEMENT, BUT LESS THAN 6', PAVEMENT FOR STREET DAMAGE WILL BE LIMITED TO 5'-0".



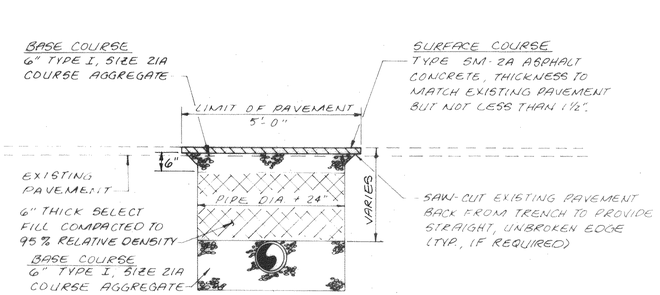

**HYPOCHLORITE SYSTEM FEEDER DETAILS**
NOT TO SCALE




**BITUMINOUS SURFACE TREATMENT PAVEMENT**
RECONSTRUCTION DETAIL:
PIPE TRENCH PARALLELING ROADWAY
SCALE: ½" = 1'-0"
SEE NOTES 2 & 3

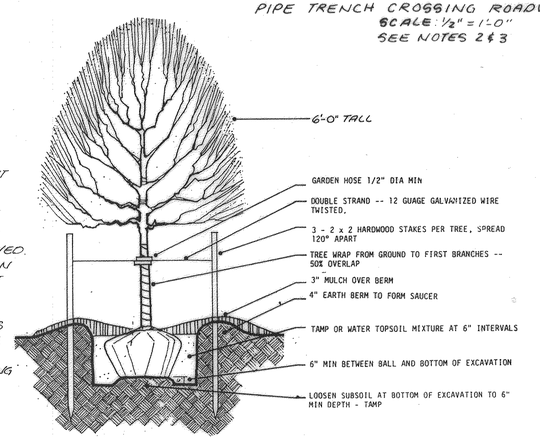



**BITUMINOUS SURFACE TREATMENT PAVEMENT**
RECONSTRUCTION DETAIL:
PIPE TRENCH CROSSING ROADWAY
SCALE: ½" = 1'-0"
SEE NOTES 2 & 3




**ASPHALT DRIVEWAY**
RECONSTRUCTION DETAIL:
SCALE: ½" = 1'-0"

Contractor Note:
THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING REPLACEMENT TREES @ APPLICABLE LOCATIONS (SEE 02821 OF SPECS.). ALL REPLACED TREES SHALL BE 6' NURSERY STOCK OF SAME SPECIES OR APPROVED SUBSTITUTE TO THAT WHICH WAS REMOVED OR DESTROYED. TREES TO HAVE BURLAP ROOT PROTECTION AND WELL PRUNED, WITH NECESSARY INSECT PROTECTION AND FERTILIZER APPLIED AS RECOMMENDED BY THE NURSERY. THE CONTRACTOR SHALL GARANTEE THE TREES TO BE HEALTHY FOR ONE YEAR FROM THE DATE OF INSTALLATION. NO ADDITIONAL PAYMENT SHALL BE MADE FOR REPLACING TREES OR SERVICING THE TREES AS REQUIRED IN THE FIRST YEAR.




1. Planting & Staking / Trees up to 10' Ht.

NOTES:

1) THE ABOVE DETAILS ARE INTENDED AS GENERAL GUIDELINES FOR MEETING VDOT REQUIREMENTS AND DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF MEETING MORE STRINGENT REQUIREMENTS

2) ADDITIONAL DAMAGE TO PAVEMENT BEYOND PAYMENT LIMITS SHALL BE RESTORED AT THE CONTRACTORS EXPENSE

3) THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY WITH THE VDOT INSPECTOR THE ADDITIONAL DETAILS TO BE EMPLOYED FOR EACH STREET OR HIGHWAY TO BE RECONSTRUCTED. INCLUDING BUT NOT LIMITED TO BORING PIT LOCATIONS, TRAFFIC CONTROL, STREET ACCESS, PAVEMENT TYPE, COMPACTION TESTING REQUIREMENTS, SAFETY PRECAUTIONS AND OTHER SPECIAL REQUIREMENTS NOT SPECIFIED OR SHOWN ON THIS SHEET.

4.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSPECTION COSTS OF THE VDOT INSPECTOR UP TO $5,000. ANY COSTS ABOVE THIS AMOUNT WILL BE PAID BY THE OWNER.


CLEAN WATER ENGINEERS, INC.
P.O. BOX 218
FINCASTLE, VIRGINIA 24090


**COMMUNITY OF EAGLE ROCK**
**WASTEWATER COLLECTION AND TREATMENT SYSTEM**
**BOTETOURT COUNTY, VIRGINIA**

CONTRACT II

"AS BUILT"

COMMONWEALTH OF VIRGINIA
DAVID J. RIGBY
No. 8169
REGISTERED PROFESSIONAL ENGINEER

| REVISIONS | | |
|---|---|---|
| NO. | DATE | BY |
| | | |
| | | |
| | | |
| | | |

| | |
|---|---|
| DESIGNED: JAF | SHEET: 19A OF 19 |
| DRAWN: TAP | SCALE: ½" = 1'-0" |
| CHECKED: JAF | DATE: MAY, 1991 |
| APPROVED: DJR | PROJECT: 86019 |