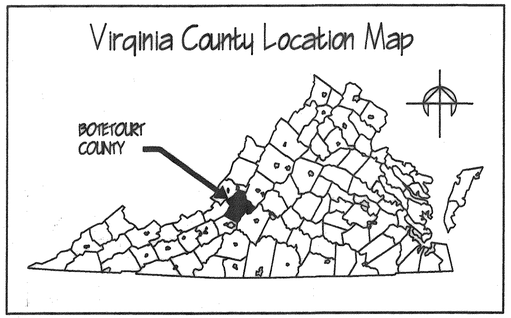
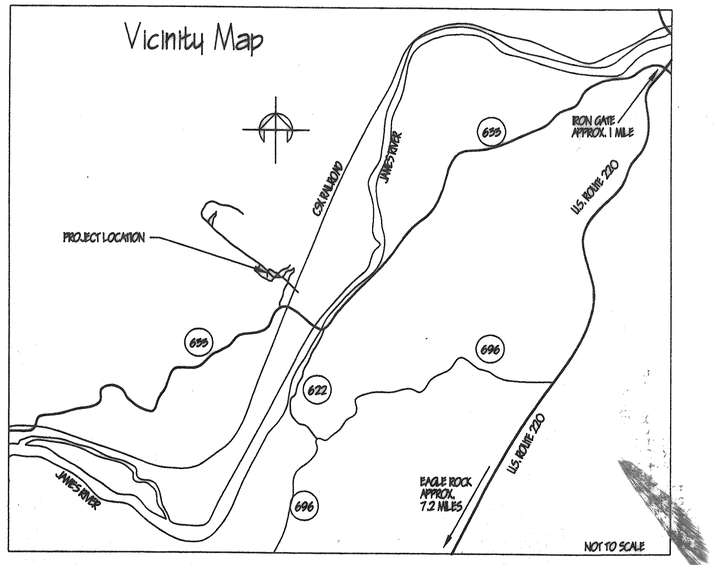
GLEN WILTON

SEWER SYSTEM IMPROVEMENTS
GLEN WILTON, VA

As-Builts





OWNER:
BOTETOURT COUNTY
DEPARTMENT OF PUBLIC WORKS
1 WEST MAIN ST., BOX 4
FINCASTLE, VA 24090
(540) 473-8316

ENGINEER:
ENGINEERING CONCEPTS, INC.
20 S. ROANOKE ST., SUITE 201
FINCASTLE, VIRGINIA 24090
(540) 473-1253

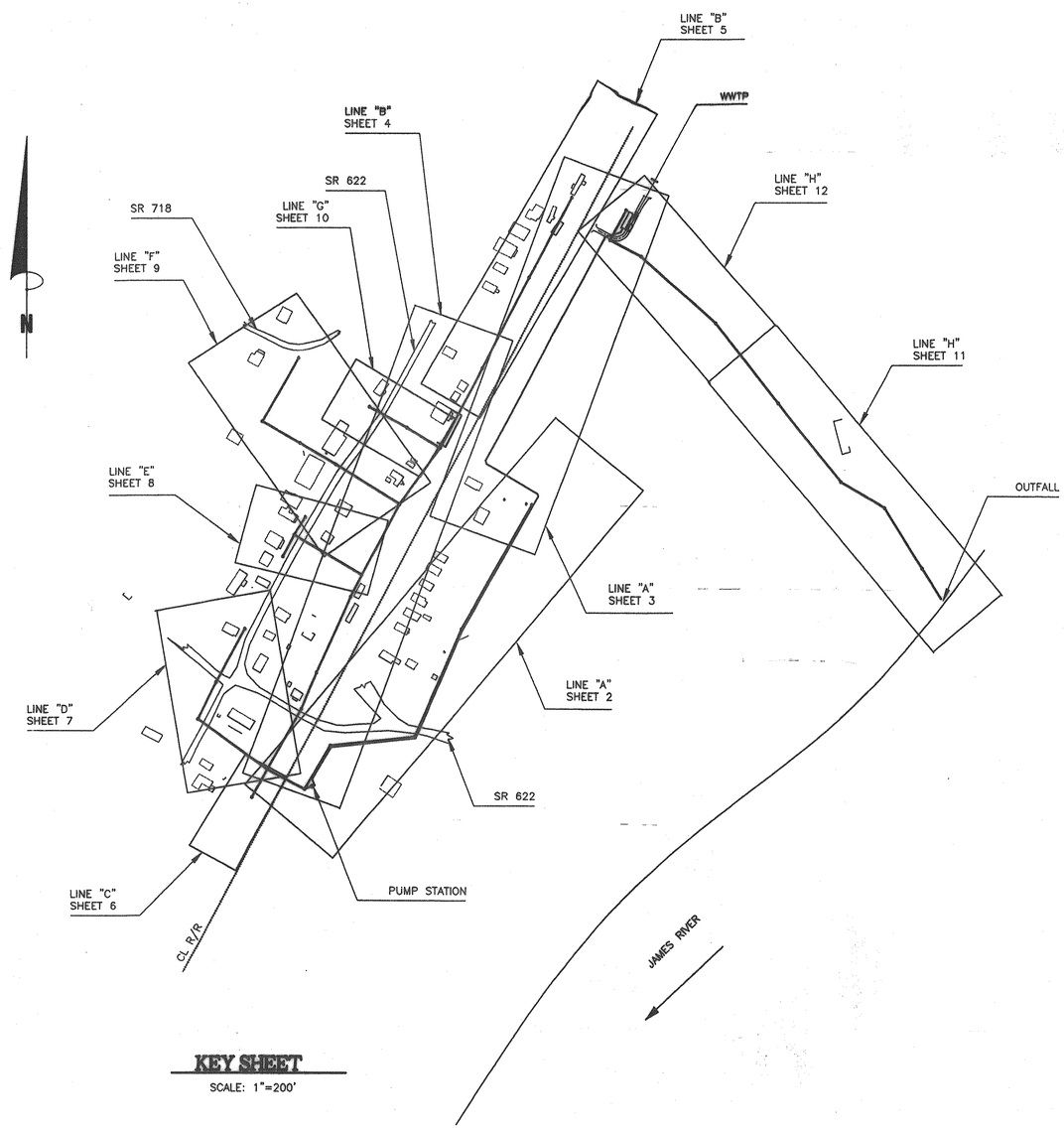
DATE: APRIL 1996
PROJECT: 95045

AS-BUILT

AS-BUILT

AB
PROJECT NAME: Glen Wilton
DATE: Sewer System Improvements
TYPE: June 1996
LOCATION: Sewer
TOTAL # SHEETS: Glen Wilton
AE FIRM: 28
OF SETS: ECI
1

COMMUNITY OF GLEN WILTON
SEWER SYSTEM IMPROVEMENTS
BOTETOURT COUNTY, VIRGINIA



KEY SHEET

SCALE: 1"=200'

CONSTRUCTION NOTES

1. ALL EXISTING SEWER SERVICES SHALL REMAIN FUNCTIONAL IN THEIR PRESENT CONDITION OR BETTER UNTIL SWITCHED TO PUBLIC SEWER.
2. ALL "DOWNSTREAM" FACILITIES SHALL BE FUNCTIONALLY CONSTRUCTED, TESTED, AND APPROVED BY THE ENGINEER FOR OPERATION BEFORE ANY EXISTING SEWER SERVICES ARE SWITCHED TO PUBLIC SEWER.
3. ACCORDINGLY, THE CONTRACTOR SHALL OBSERVE THE FOLLOWING REQUIRED SEQUENCE OF FUNCTIONAL OPERATION:
   A. LINE "H"
   B. WWTP
   C. FORCE MAIN
   D. PUMP STATION
   E. LINES "A" & "B"
   F. LINES "C", "D", "E", "F" & "G"
   G. HOUSE CONNECTIONS
4. ALL SANITARY DISCHARGE POINTS FROM ANY STRUCTURE SHALL BE CONNECTED TO PUBLIC SEWER, i.e. SEPTIC TANKS, SINK DRAINS, BATHTUB DRAINS, ETC., ALL NON-SANITARY DISCHARGE POINTS SHALL BE DIVERTED FROM THE PUBLIC SEWER CONNECTION, i.e. ROOF DRAINS, STORM DRAINS, GUTTERS, ETC.
5. BATHROOMS ARE BEING ADDED TO SOME STRUCTURES BY A SEPARATE CONTRACT. CONTRACTORS SHALL COORDINATE AS REQUIRED TO ENSURE ALL FACILITIES ARE CONNECTED TO PUBLIC SEWER.

DRAWING INDEX

KEY CONTACTS

1. GLEN WILTON WATER CO.
   CONTACT JERRY CALDWELL
   OR RICHARD MATHIEU
2. JERRY CALDWELL
   (H) 540-862-9004
   (W) 540-884-2589
3. RICHARD MATHIEU
   (W) 540-862-0098
4. BOTETOURT COUNTY DEPT. OF PUBLIC WORKS
   ASSISTANT COUNTY ENGINEER: MIKE JEFFRIES
   COUNTY ENGINEER: KEVIN SHEARER
   DIRECTOR OF PUBLIC WORKS: KURT HODGEN
   540-473-8316
5. ENGINEERING CONCEPTS, INC.
   PROJECT ENGINEER: NICKIE MILLS
   540-473-1253

LINETYPE LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY
- FLOW LINES
- WATER LINE
- SEWER LINE
- FENCE
- EASEMENTS

GENERAL NOTES

1. INFORMATION ON THESE DRAWINGS CONCERNING THE LOCATION AND ELEVATION OF EXISTING UTILITIES, STRUCTURES, AND OBSTRUCTIONS HAS BEEN PREPARED FROM THE MOST RELIABLE INFORMATION AVAILABLE TO THE ENGINEER. THE ACCURACY AND COMPLETENESS OF THIS INFORMATION ARE NOT GUARANTEED, HOWEVER, NOR DOES THE ENGINEER ACCEPT ANY RESPONSIBILITY WHATSOEVER FOR DEVIATIONS OF THE EXISTING UTILITIES, STRUCTURES, OTHER FACILITIES, AND OBSTRUCTIONS FROM THE LOCATIONS AND ELEVATIONS INDICATED OR FOR THE EXISTENCE OF UTILITIES, STRUCTURES, OTHER FACILITIES, AND OBSTRUCTIONS NOT INDICATED ON THESE DRAWINGS.

2. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION TO ELIMINATE ANY POSSIBILITY OF ANY DISTURBANCE OF OR DAMAGE TO PUBLIC AND PRIVATELY-OWNED UTILITIES, STRUCTURES, OTHER FACILITIES, AND OBSTRUCTION RESULTING FROM HIS ACTIVITIES. TO THIS END, CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, TAKE ALL MEASURES NECESSARY TO PROVIDE, AND SHALL BE SOLELY RESPONSIBLE FOR, TEMPORARY SUPPORT AND SHORING, ADEQUATE PROTECTION, AND MAINTENANCE OF CONTINUOUS OPERATION OF ALL UNDERGROUND AND ABOVEGROUND WATER, SEWER, AND GAS MAINS AND SERVICE LINES; PETROLEUM LINES; TELEPHONE, TELEVISION, AND ELECTRICAL LINES, CABLES, AND POLES; EQUIPMENT CABLES AND CONDUITS; STORM SEWERS; BUILDINGS; TANKS; FENCES; AND ALL OTHER UTILITIES, STRUCTURES, FACILITIES, AND OBSTRUCTIONS, WHETHER OR NOT INDICATED ON THESE DRAWINGS. ALL DISTURBED OR DAMAGED UTILITIES, STRUCTURES, OTHER FACILITIES, AND OBSTRUCTIONS SHALL BE IMMEDIATELY REPAIRED, REPLACED, OR COMPENSATED FOR BY THE CONTRACTOR TO OWNER'S SATISFACTION, AND AT NO ADDITIONAL COST TO THE OWNER.

3. **THE CONTRACTOR SHALL BEAR SOLE RESPONSIBILITY FOR THE CHARACTER AND ACTUAL LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES, STRUCTURES, OTHER FACILITIES, AND OBSTRUCTIONS WITHIN THE PROJECT AREA. THE CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, CONTACT THE OWNERS/OPERATORS OF ALL UTILITIES AND ARRANGE FOR THE VERIFICATION AND MARKING OF UTILITY LOCATIONS BY SAID OWNERS/OPERATORS. THE CONTRACTOR SHALL ASSIST THE UTILITY OWNERS/OPERATORS BY EVERY MEANS POSSIBLE TO DETERMINE THE LOCATION OF UTILITIES. THE CONTRACTOR SHALL BEAR SOLE RESPONSIBILITY FOR ALL DISTURBANCE OF ANY DAMAGE TO UTILITIES RESULTING FROM THE CONTRACTOR'S FAILURE TO ARRANGE FOR THE LOCATION OF UTILITIES BY THE OWNERS/OPERATORS OF THE UTILITIES. CONTACT MISS UTILITY (800) 552-7001.**

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL NEW ABOVE AND BELOW GRADE PIPING, STRUCTURES, ELECTRICAL EQUIPMENT AND CONDUIT, AND OTHER FACILITIES AT THE PROJECT SITE, FROM ALL DISTURBANCE OR DAMAGE WHICH MAY RESULT FROM THE PERFORMANCE OF WORK ON THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE REPAIR OR REPLACEMENT OF ALL NEW ABOVE AND BELOW GRADE PIPING STRUCTURES, ELECTRICAL EQUIPMENT AND CONDUIT, AND OTHER FACILITIES AT THE PROJECT SITE WHICH MAY BE DISTURBED OR DAMAGED AS A RESULT OF THE PERFORMANCE OF WORK ON THIS PROJECT.

5. SITE CONDITIONS MAY NECESSITATE SLIGHT DEVIATIONS IN ALIGNMENT, GRADE, AND/OR LOCATION OF NEW FACILITIES FROM THE ALIGNMENT, GRADE, AND/OR LOCATION INDICATED ON THESE DRAWINGS. THE CONTRACTOR SHALL CONSTRUCT THE NEW FACILITIES TO SUCH DEVIATIONS AS DIRECTED BY THE ENGINEER WITHOUT INCREASE IN THE CONTRACT PRICE OR FINE.

6. THE CONTRACTOR SHALL MAINTAIN A CLEAR FLOW PATH TO AND THROUGH ALL SURFACE WATER AND STORM WATER DRAINAGE FACILITIES AT ALL TIMES.

7. THE CONTRACTOR SHALL GRADE, SEED, AND/OR SOD, AND MULCH THE ENTIRE AREA(S) DISTURBED BY CONSTRUCTION ACTIVITIES.

8. CONSTRUCTION AND START-UP OF ALL WORK SHALL NOT INTERFERE WITH THE OPERATION OF WATER AND SEWERAGE FACILITIES. THE CONTRACTOR SHALL COORDINATE AND SCHEDULE ALL WORK WITH THE OWNERS AS REQUIRED.

9. MINIMUM COVER ON ALL PIPE SHALL BE 3 FEET, UNLESS OTHERWISE SPECIFICALLY INDICATED ON THESE DRAWINGS. ALL PIPE SHALL BE INSTALLED WITH DETECTOR TAPE 18" FROM FINISHED GRADED DIRECTLY OVER PIPE. ALL PVC PIPE SHALL BE INSTALLED WITH COATED TRACER WIRE TO FACILITATE FUTURE LOCATION OF PIPE AFTER CONSTRUCTION IS COMPLETED.

10. WHERE IT IS NECESSARY TO DEFLECT PIPE EITHER HORIZONTALLY OR VERTICALLY, PIPE JOINT DEFLECTION OR BARREL BEND RADIUS SHALL NOT EXCEED 75% OF THE MANUFACTURER'S RECOMMENDED DEFLECTION ANGLE OR BEND RADIUS.

11. ALL PIPING SHALL BE PROPERLY SUPPORTED. ALL PIPING WHICH WILL BE PRESSURIZED DURING OPERATION SHALL BE PROPERLY RESTRAINED.

12. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE CURRENT BOCA AND/OR STATE AND LOCAL BUILDING CODES.

13. CONTRACTOR SHALL MAINTAIN THE CONSTRUCTION AREA IN A MANNER ACCEPTABLE TO OWNER AND SHALL BE RESPONSIBLE FOR REMEDIATING ANY DAMAGES RESULTING FROM FAILURE TO DO SO.

14. ALL EXCAVATION SHALL BE UNCLASSIFIED. NO ADDITIONAL PAYMENT WILL BE CONSIDERED FOR ROCK EXCAVATION, UNLESS OTHERWISE SPECIFIED.

15. CONTRACTOR SHALL MAINTAIN LIMITS OF CONSTRUCTION WITHIN THE BOUNDARIES OF THE PROPERTY AND EASEMENTS AS INDICATED.

16. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS, INCLUDING BUT NOT LIMITED TO LAND DISTURBING PERMIT, VDOT ROAD CROSSING PERMITS, RAILROAD CROSSING PERMITS AND BUILDING PERMIT.

AS-BUILT

AS-BUILT

FILE: KEYSHEET 6/5/96 ACADVER13 NDM

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	RHW
CHECKED	WPJ
APPROVED	WPJ
SCALE	1"=200'
DATE	JUNE '96
PROJECT	95045

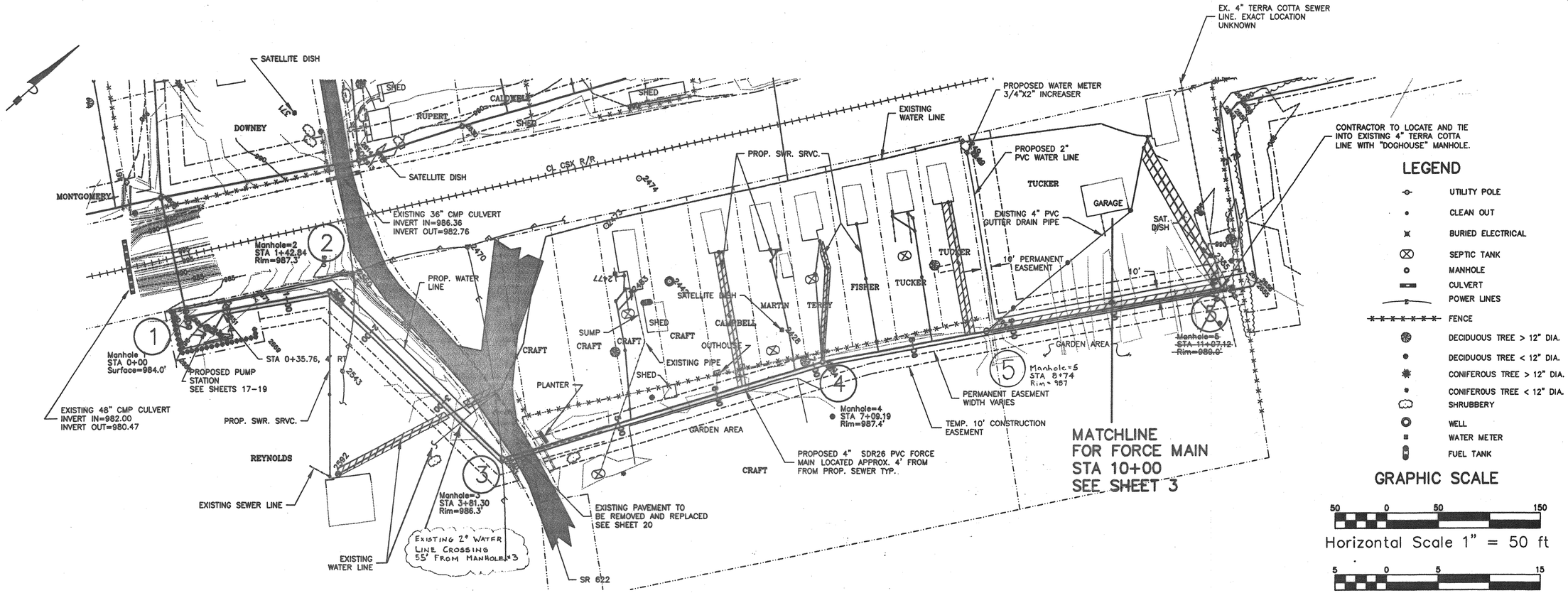
REVISIONS

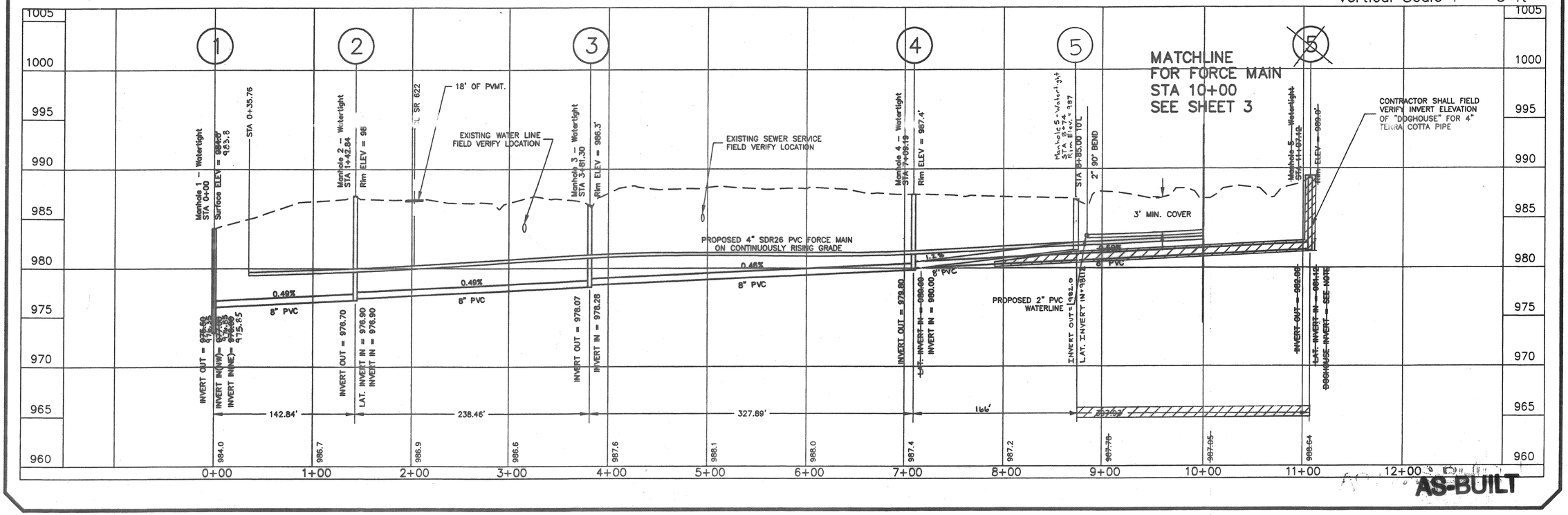
NO.	DATE	BY

GLEN WILTON
SEWER SYSTEM IMPROVEMENTS
KEY SHEET **AS-BUILT**

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 022328
6-11-96
PROFESSIONAL ENGINEER

SHEET NO. 1 OF 25





ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	RHW/NDM
CHECKED	WPJ
APPROVED	WPJ
SCALE	H: 1"=50' V: 1"=5'
DATE	JUNE '96
PROJECT	95045

REVISIONS		
NO.	DATE	BY

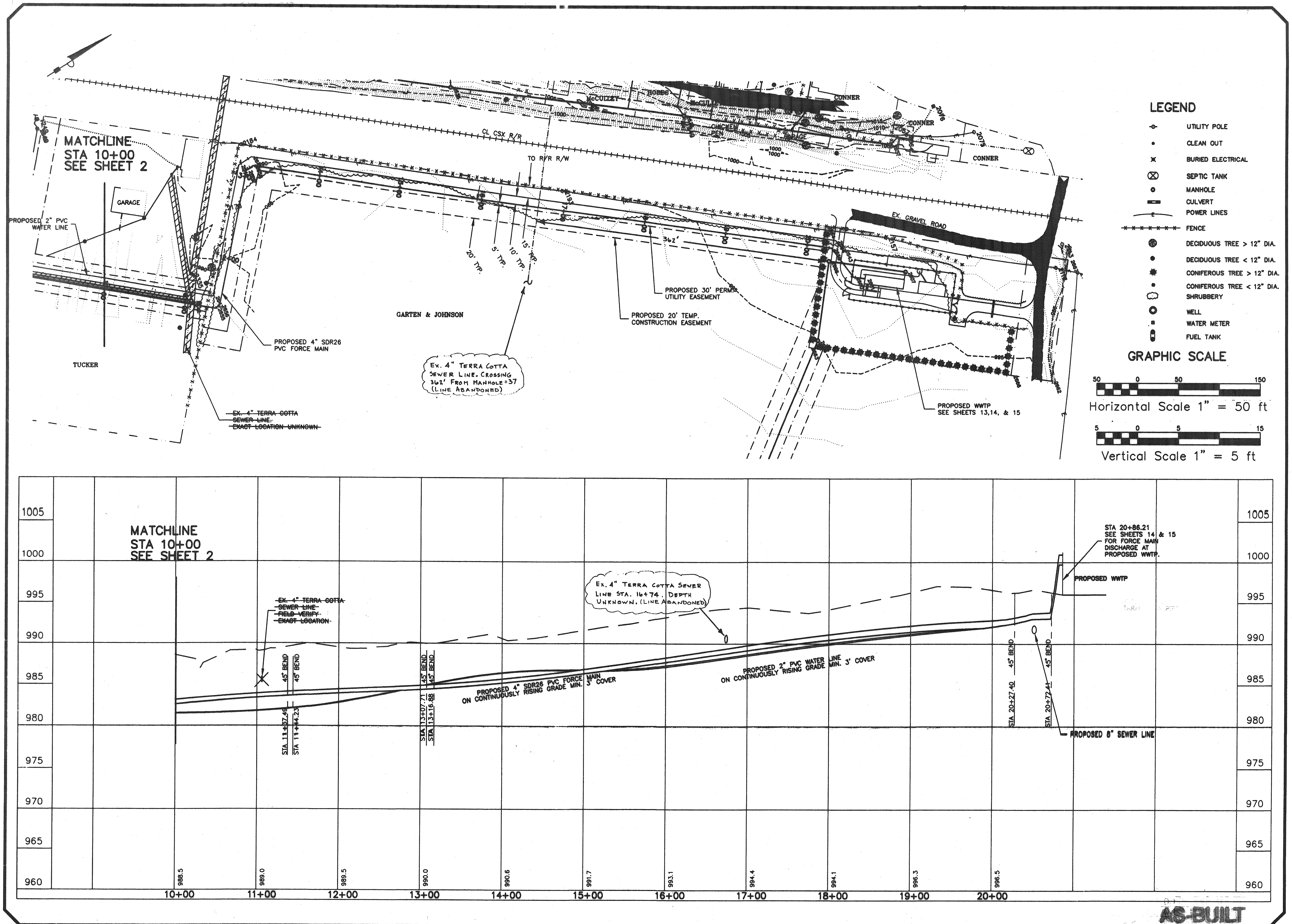
GLEN WILTON SEWER SYSTEM IMPROVEMENTS LINE "A"

As - Built

COMMONWEALTH OF PENNSYLVANIA
WILLIAM P. JOHNSON, II
No. 025328
5-11-96
PROFESSIONAL ENGINEER

SHEET NO. 2 OF 25

FILE: RIVRSIDE 6/10/96 ACHMMR13.MDM


MATCHLINE
STA 10+00
SEE SHEET 2
PROPOSED 2" PVC WATER LINE
GARAGE
TUCKER
CL CSX R/R
TO R/R R/W
HOBBS
McCULLEY
CONNER
CHICKEN PEN
GARAGE
20' TYP.
5' TYP.
10' TYP.
15' TYP.
362'
EX. GRAVEL ROAD
GARTEN & JOHNSON
PROPOSED 4" SDR26 PVC FORCE MAIN
PROPOSED 30' PERM. UTILITY EASEMENT
PROPOSED 20' TEMP. CONSTRUCTION EASEMENT
Ex. 4" Terra Cotta Sewer Line. Crossing 362' From Manhole #37 (Line Abandoned)
EX. 4" TERRA COTTA SEWER LINE. EXACT LOCATION UNKNOWN
PROPOSED WWTP SEE SHEETS 13,14, & 15
LEGEND
UTILITY POLE
CLEAN OUT
BURIED ELECTRICAL
SEPTIC TANK
MANHOLE
CULVERT
POWER LINES
FENCE
DECIDUOUS TREE > 12" DIA.
DECIDUOUS TREE < 12" DIA.
CONIFEROUS TREE > 12" DIA.
CONIFEROUS TREE < 12" DIA.
SHRUBBERY
WELL
WATER METER
FUEL TANK
GRAPHIC SCALE
50 0 50 150
Horizontal Scale 1" = 50 ft
5 0 5 15
Vertical Scale 1" = 5 ft
MATCHLINE
STA 10+00
SEE SHEET 2
EX. 4" TERRA COTTA SEWER LINE FIELD VERIFY EXACT LOCATION
45° BEND
45° BEND
STA 11+37.49
STA 11+44.23
45° BEND
45° BEND
STA 13+07.71
STA 13+16.88
PROPOSED 4" SDR26 PVC FORCE MAIN ON CONTINUOUSLY RISING GRADE MIN. 3' COVER
Ex. 4" Terra Cotta Sewer Line Sta. 16+74. Depth Unknown. (Line Abandoned)
PROPOSED 2" PVC WATER LINE ON CONTINUOUSLY RISING GRADE MIN. 3' COVER
45° BEND
STA 20+27.40
45° BEND
STA 20+72.41
PROPOSED 8" SEWER LINE
STA 20+86.21 SEE SHEETS 14 & 15 FOR FORCE MAIN DISCHARGE AT PROPOSED WWTP.
PROPOSED WWTP
1005
1000
995
990
985
980
975
970
965
960
988.5
989.0
989.5
990.0
990.6
991.7
993.1
994.4
994.1
996.3
996.5
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
AS-BUILT
FILE: FORDMAN 6/10/96 ACADWWR13 NDM

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	RHW
CHECKED	WPJ
APPROVED	WPJ
SCALE	H:1"=50' V:1"=5'
DATE	JUNE '96
PROJECT	95045

REVISIONS

NO.	DATE	BY

GLEN WILTON
SEWER SYSTEM IMPROVEMENTS
LINE "A"
As-Built

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024328
6-11-96
PROFESSIONAL ENGINEER

SHEET NO. 3 OF 25

EX. 60" CMP CULVERT
INVERT IN=988.54
INVERT OUT=987.84

EX. 15" RCP CULVERT
INVERT IN=999.26
INVERT OUT=998.37

EX. DI ON 15" RCP CULVERT
INVERT IN=1011.65
INVERT OUT=1011.05

EX. 15" CMP CULVERT
INVERT OUT=1007.95

EX. TERRA COTTA SEWER LINE - EXACT LOCATION UNKNOWN

EX. 18" CMP CULVERT
INVERT IN=1010.58
INVERT OUT=1010.13

CONNECTION NOT MADE

EXISTING 48" CMP CULVERT
INVERT IN=982.00
INVERT OUT=980.47

PROP. 6" SWR.

SAT. DISH

Manhole=6
STA 1+42.63
Rim=987.6'
987.2'

MONTGOMERY

DOWNEY

CALDWELL

PROP. SWR. SRVC.

SCRUGGS

SHED

Manhole=8
STA 4+48.92
Rim=989.7

RUPERT

OVERHEAD LIGHT POLE WITH BURIED ELEC. SERVICE

POINT ON EX. WATER LINE

WELL

PROP. SWR. SRVC.

MATHIEU

WILLIAMS

EX. SEWER SERVICE

BUCHANAN

HILL

EX. GRAPE ARBOR

GLEN WILTON METHODIST CHURCH

SATELLITE DISH

ANTENNA

EX. SEWER SERVICE

WATER SPIGOT

PROP. SWR. SRVC.

PLANTER

SHED

GREENHOUSE

EAKIN

EXISTING IRON PIPE ON PROPERTY LINE

SATELLITE DISH

GARAGE

CL CSX R/R

EXISTING PAVEMENT TO BE REMOVED & REPLACED SAW CUT 6' WIDE SEE DETAIL SHEET 20

EXISTING 36" CULVERT
INVERT IN=986.36
INVERT OUT=982.75

ENCASED CROSSING

1/2" PIPE FOR SATELLITE DISH

Manhole=7
STA 3+40.37
Rim=991.6'
990.7'

20' PERMANENT EASEMENT TYP.

TEMP. CONST. ESMT. EXTENDS TO LOT LINE AS SHOWN

SHED

Manhole=9
STA 6+80.77
Rim=992.2'

Manhole=10
STA 7+49.30
Rim=994.4'

2" PVC WATER LINE (ACTIVE).

EX. FOUNDATION TO BE REMOVED AS NECESSARY

Manhole=11
STA 9+73.14
Rim=999.7'

EX. 100' CSX R/W

EXISTING 4" TERRA COTTA SEWER LINE - EXACT LOCATION UNKNOWN

Manhole=12
STA 11+71.12
Rim=1006.2'

Manhole=1
STA 0+22.58
Rim=984.8'
983.8'

PROPOSED PUMP STATION SEE SHEETS 17,18,19

PERMANENT EASEMENT WIDTH VARIES

10' TEMPORARY CONSTRUCTION EASEMENT TYP.

1¼" BLACK PLASTIC WATER LINE (ABANDONED)

SEE SHEET 4A of 25 FOR ALIGNMENT CHANGE

MATCHLINE
STA 12+50
SEE SHEET 5

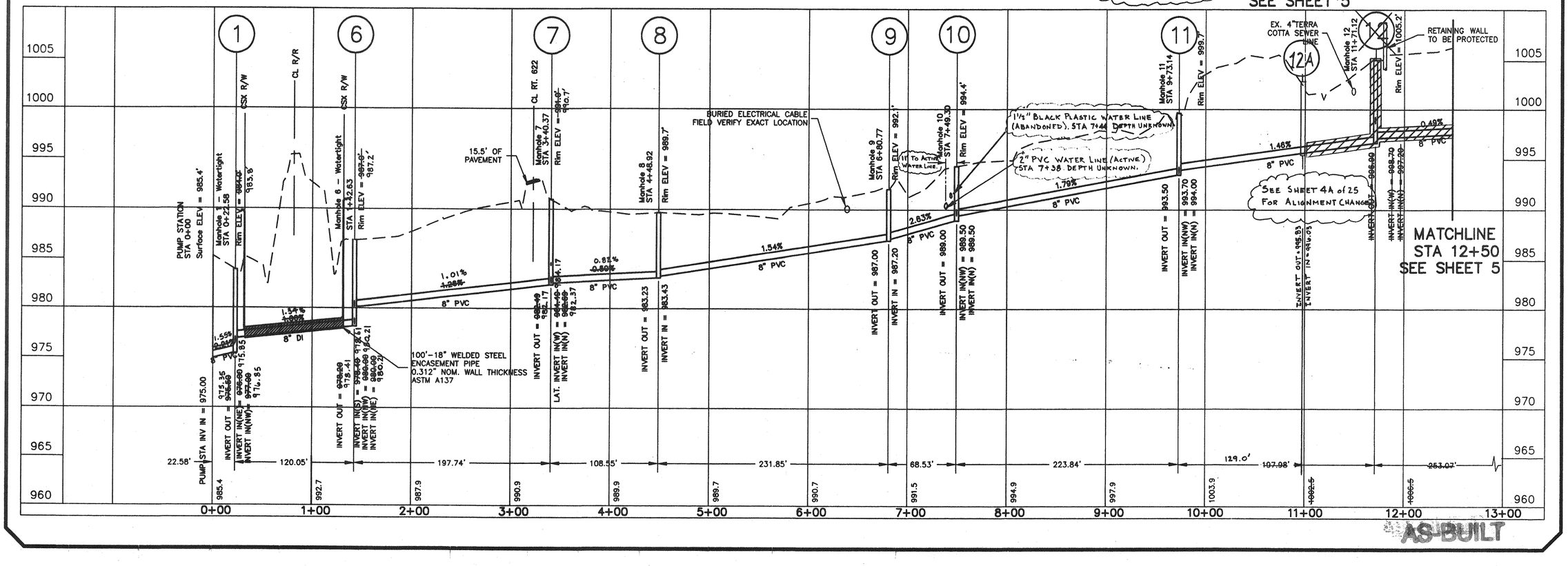
LEGEND

- UTILITY POLE
- CLEAN OUT
- BURIED ELECTRICAL
- SEPTIC TANK
- MANHOLE
- CULVERT
- POWER LINES
- FENCE
- DECIDUOUS TREE > 12" DIA.
- DECIDUOUS TREE < 12" DIA.
- CONIFEROUS TREE > 12" DIA.
- CONIFEROUS TREE < 12" DIA.
- SHRUBBERY
- WELL
- WATER METER
- FUEL TANK

GRAPHIC SCALE

50 0 50 150
Horizontal Scale 1" = 50 ft

5 0 5 15
Vertical Scale 1" = 5 ft



AS-BUILT

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	RHW/NDM
CHECKED	WPJ
APPROVED	WPJ
SCALE	H:1"=50' V:1"=5'
DATE	JUNE '96
PROJECT	95045

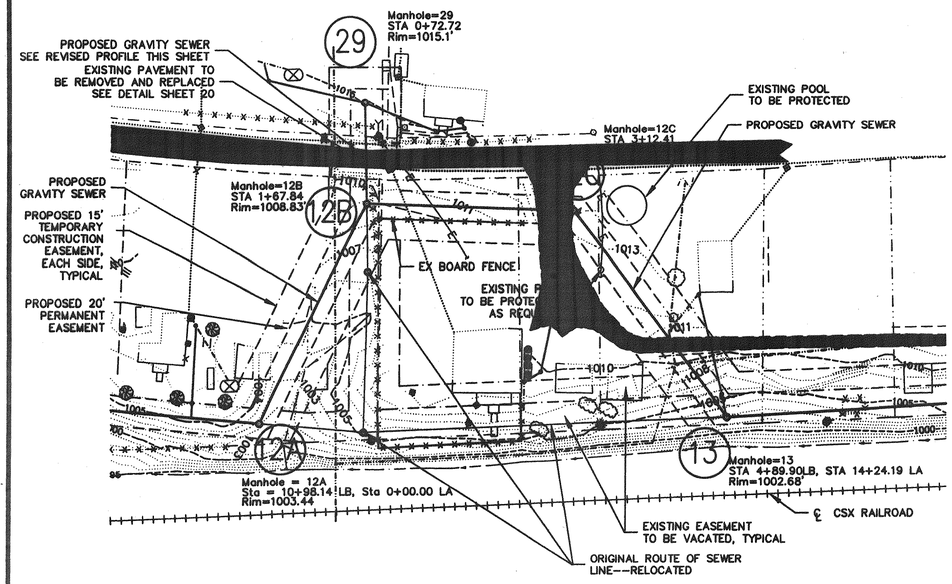
REVISIONS		
NO.	DATE	BY

GLEN WILTON SEWER SYSTEM IMPROVEMENTS LINE "B" AS-BUILT

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024328
6-11-96
PROFESSIONAL ENGINEER

SHEET NO. 4 OF 25

FILE: W_SSCE1B 6/10/96 ACADVER13 NDM



SCALES:
1" =50' HOR
1" =5' VER

LEGEND

- UTILITY POLE
- CLEAN OUT
- BURIED ELECTRICAL
- SEPTIC TANK
- MANHOLE
- CULVERT
- POWER LINES
- FENCE
- DECIDUOUS TREE > 12" DIA.
- DECIDUOUS TREE < 12" DIA.
- CONIFEROUS TREE > 12" DIA.
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- SHRUBBERY
- WELL
- WATER METER
- FUEL TANK

GRAPHIC SCALE

50 0 50 150

Horizontal Scale 1" = 50 ft

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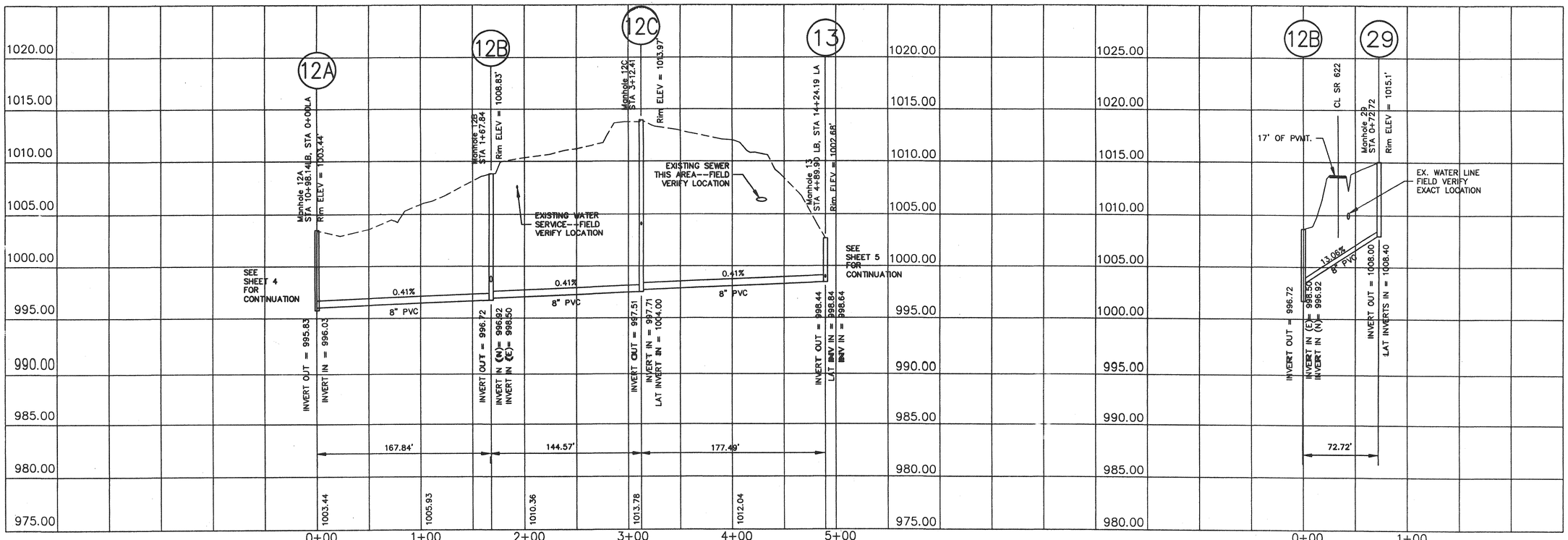


AS-BUILT

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	NDM
CHECKED	NDM
APPROVED	WPJ
SCALE	AS SHOWN
DATE	NOV '96
PROJECT	96063

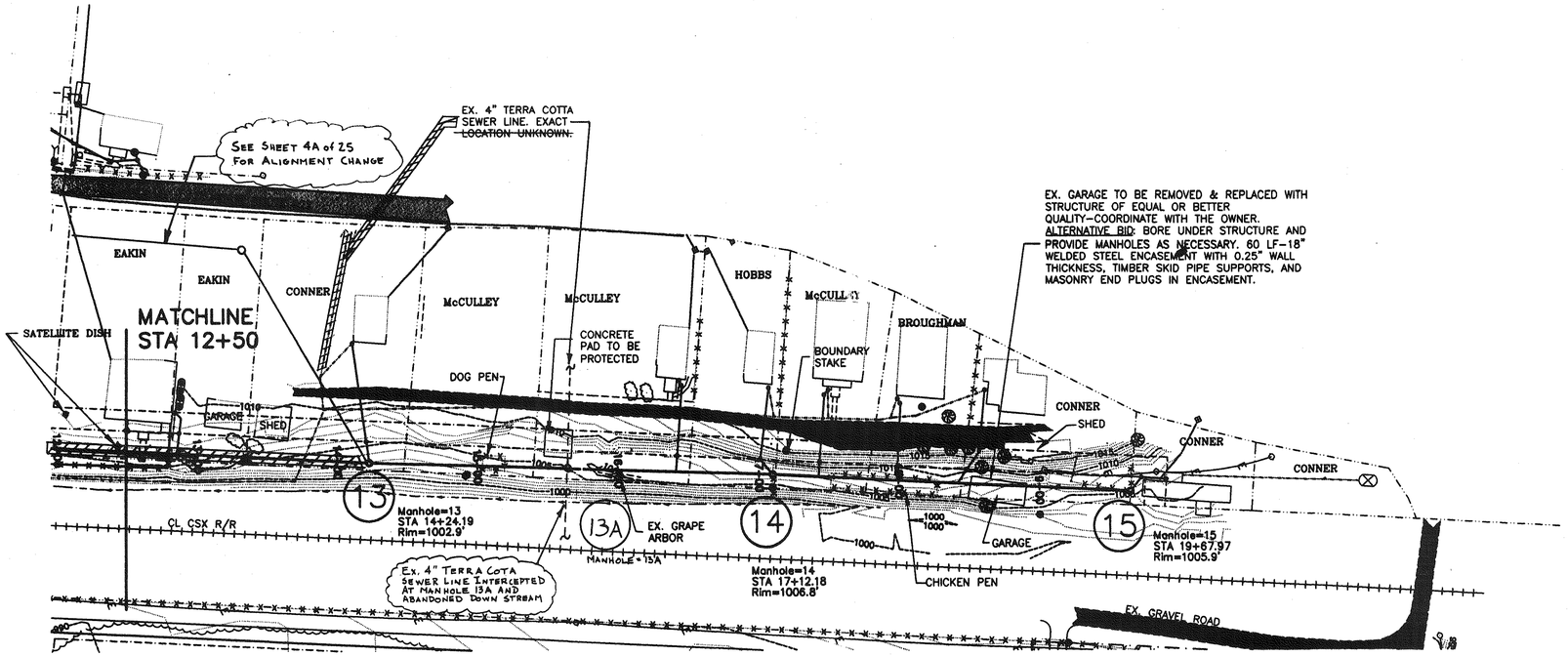
REVISIONS		
NO.	DATE	BY

GLEN WILTON As-Built
LINE "B" REROUTE
SEWER SYSTEM IMPROVEMENTS

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024328
11-25-96
PROFESSIONAL ENGINEER

SHEET NO. 4a OF 25

FILE: REROUTE=10101 11/21/96 ACADVER13 NDM



LEGEND

- UTILITY POLE
- CLEAN OUT
- BURIED ELECTRICAL
- SEPTIC TANK
- MANHOLE
- CULVERT
- POWER LINES
- FENCE
- DECIDUOUS TREE > 12" DIA.
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- WATER METER
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GRAPHIC SCALE

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Horizontal Scale 1" = 50 ft

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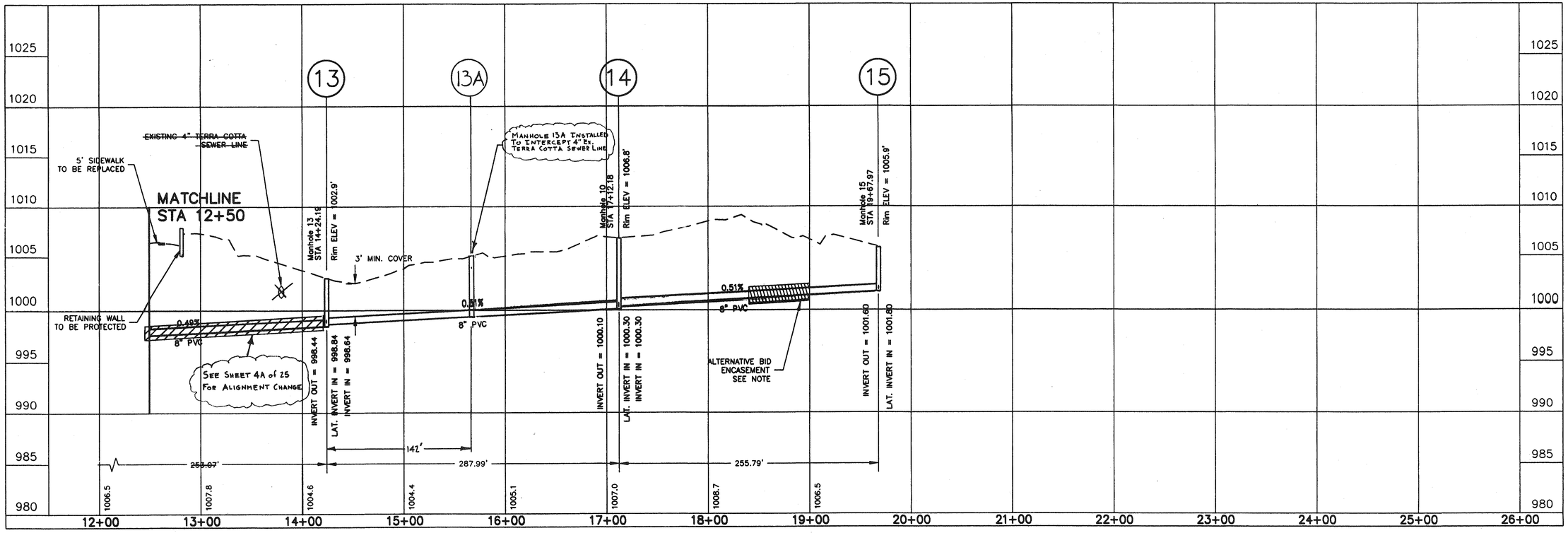
Vertical Scale 1" = 5 ft



AS-BUILT

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	RHW/NDM
CHECKED	WPJ
APPROVED	WPJ
SCALE	H:1"=50' V:1"=5'
DATE	APRIL '96
PROJECT	95045

REVISIONS

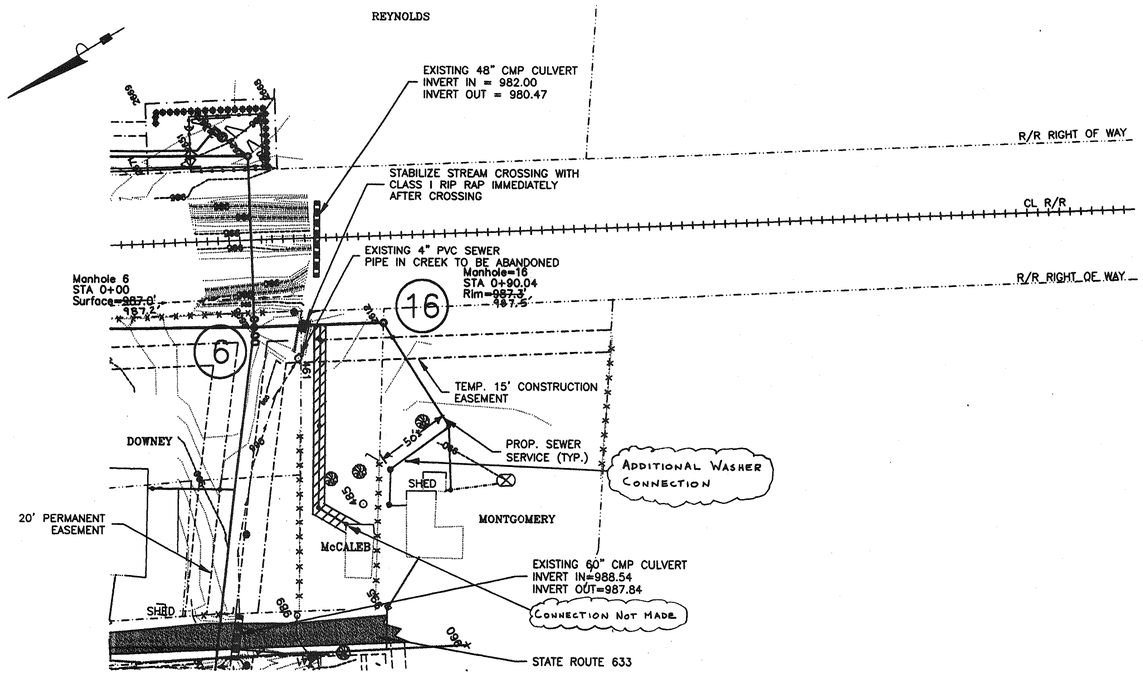
NO.	DATE	BY

GLEN WILTON SEWER SYSTEM IMPROVEMENTS LINE "B" As-Built

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024828
4-30-96
PROFESSIONAL ENGINEER

SHEET NO. 5 OF 25

FILE: W_SHEET.DWG 4/29/96 ACADVER13 RHW



LEGEND

- UTILITY POLE
- CLEAN OUT
- BURIED ELECTRICAL
- SEPTIC TANK
- MANHOLE
- CULVERT
- POWER LINES
- FENCE
- DECIDUOUS TREE > 12" DIA.
- DECIDUOUS TREE < 12" DIA.
- CONIFEROUS TREE > 12" DIA.
- CONIFEROUS TREE < 12" DIA.
- SHRUBBERY
- WELL
- WATER METER
- FUEL TANK

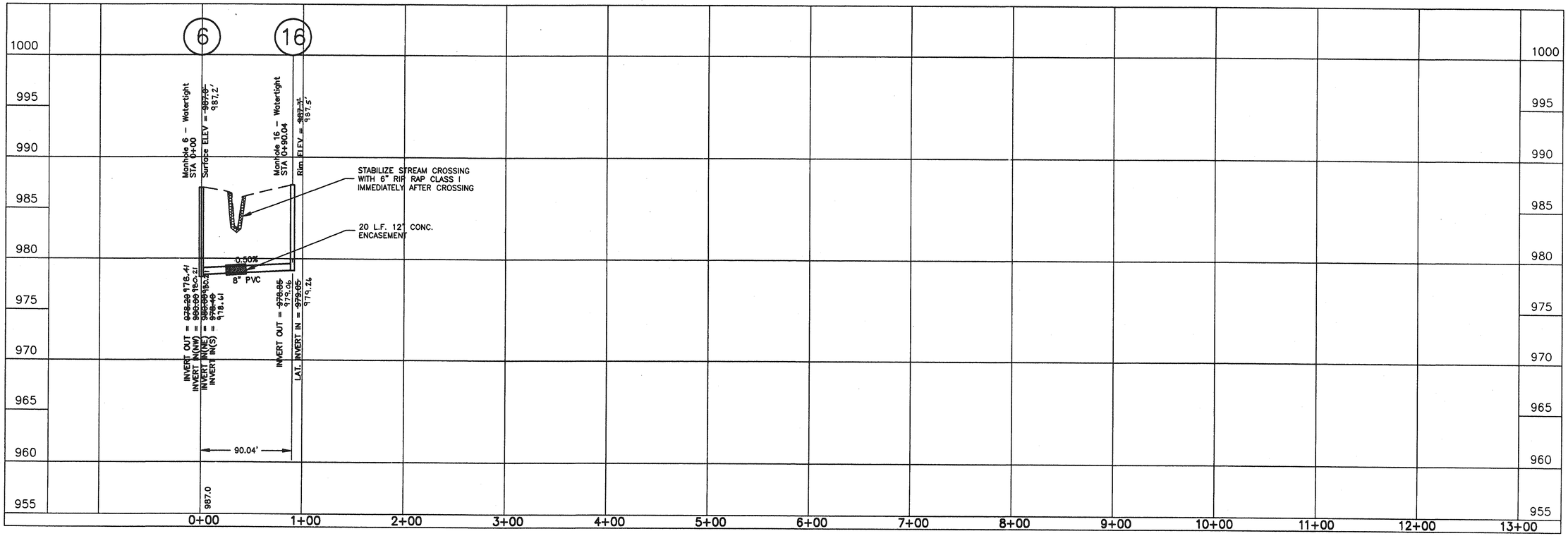
GRAPHIC SCALE

50 0 50 150

Horizontal Scale 1" = 50 ft

5 0 5 15

Vertical Scale 1" = 5 ft



AS-BUILT

FILE: MONTGOMERY 6/10/96 ACADVER13 MDM

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	RHW/NDM
CHECKED	WPJ
APPROVED	WPJ
SCALE	H:1"=50' V:1"=5'
DATE	JUNE '96
PROJECT	95045

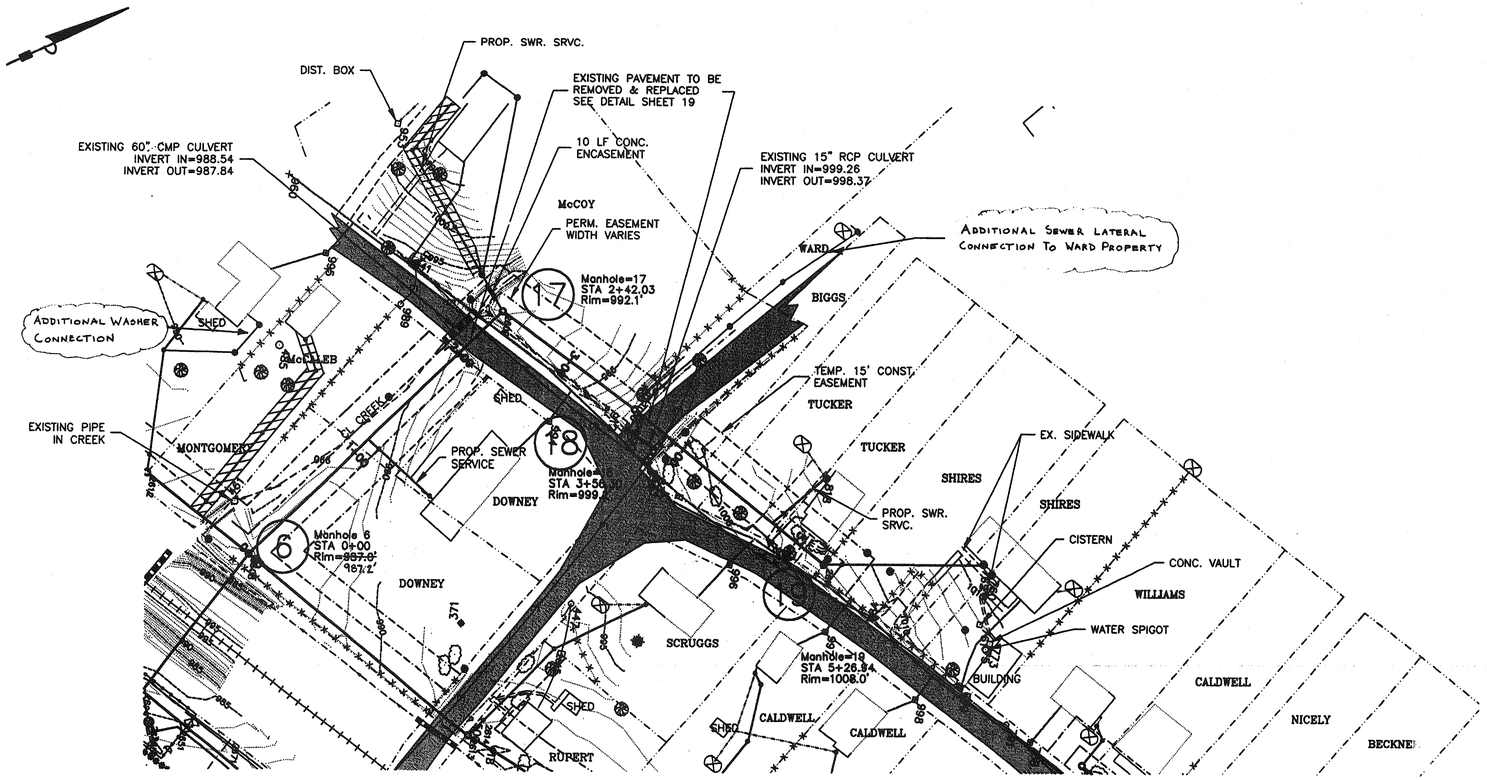
REVISIONS

NO.	DATE	BY

GLEN WILTON SEWER SYSTEM IMPROVEMENTS LINE "C" As-Built

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024328
6-11-96
PROFESSIONAL ENGINEER

SHEET NO. 6 OF 25



LEGEND

- UTILITY POLE
- CLEAN OUT
- BURIED ELECTRICAL
- SEPTIC TANK
- MANHOLE
- CULVERT
- POWER LINES
- FENCE
- DECIDUOUS TREE > 12" DIA.
- DECIDUOUS TREE < 12" DIA.
- CONIFEROUS TREE > 12" DIA.
- CONIFEROUS TREE < 12" DIA.
- SHRUBBERY
- WELL
- WATER METER
- FUEL TANK

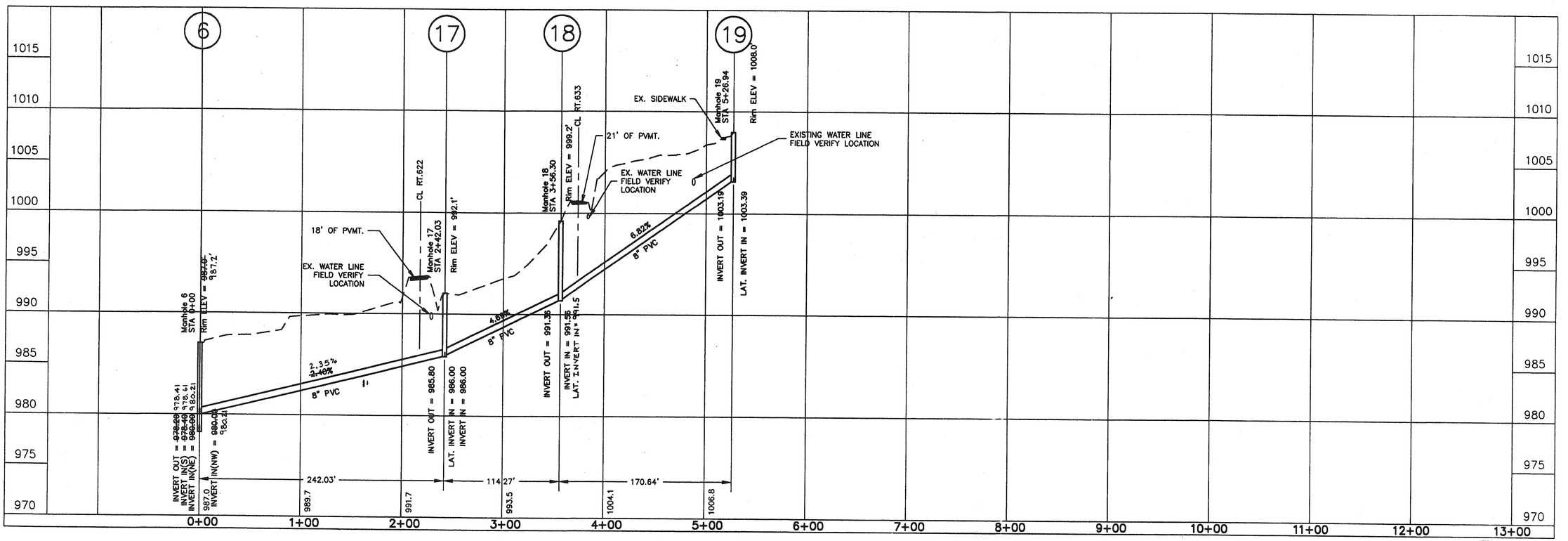
GRAPHIC SCALE

50 0 50 150

Horizontal Scale 1" = 50 ft

5 0 5 15

Vertical Scale 1" = 5 ft



AS-BUILT

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	RHW/NDM
CHECKED	WPJ
APPROVED	WPJ
SCALE	H: 1"=50' V: 1"=5'
DATE	JUNE '96
PROJECT	95045

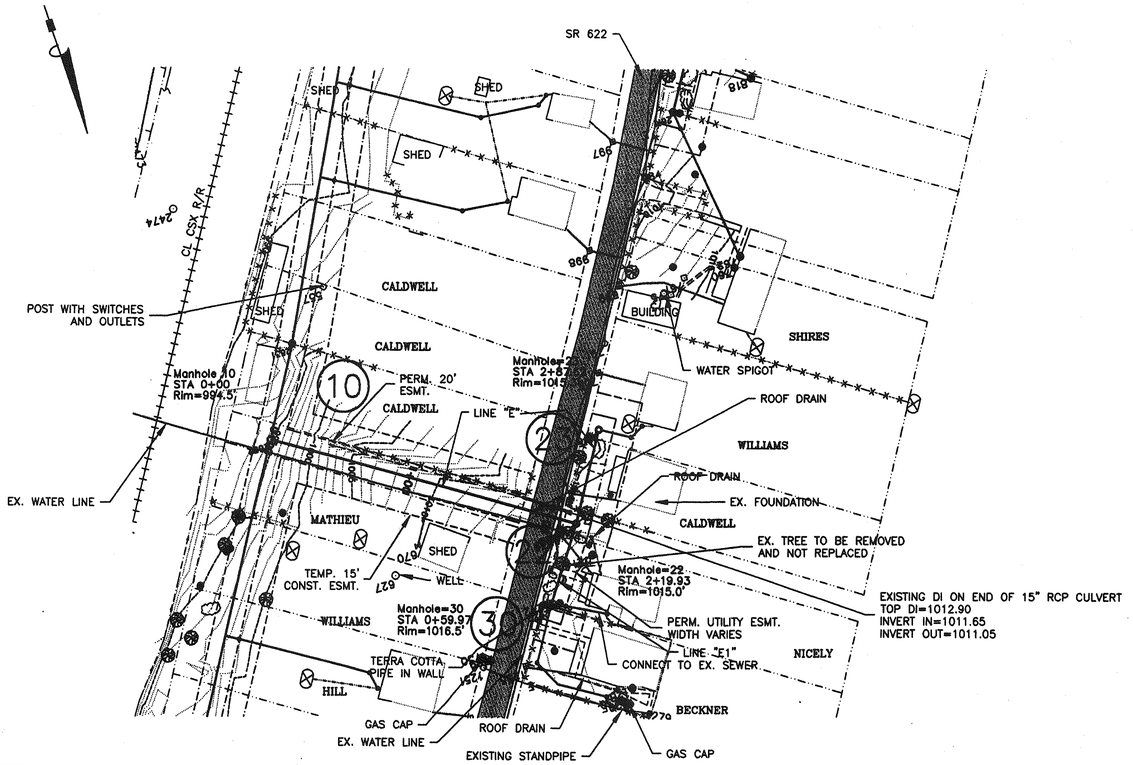
REVISIONS		
NO.	DATE	BY

GLEN WILTON SEWER SYSTEM IMPROVEMENTS LINE "D" AS-BUILT

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024328
6-11-96
PROFESSIONAL ENGINEER

SHEET NO. 7 OF 25

FILE: SHEES 6/10/96 R13 NDM



LEGEND

- UTILITY POLE
- CLEAN OUT
- BURIED ELECTRICAL
- SEPTIC TANK
- MANHOLE
- CULVERT
- POWER LINES
- FENCE
- DECIDUOUS TREE > 12" DIA.
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- CONIFEROUS TREE > 12" DIA.
- CONIFEROUS TREE < 12" DIA.
- SHRUBBERY
- WELL
- WATER METER
- FUEL TANK

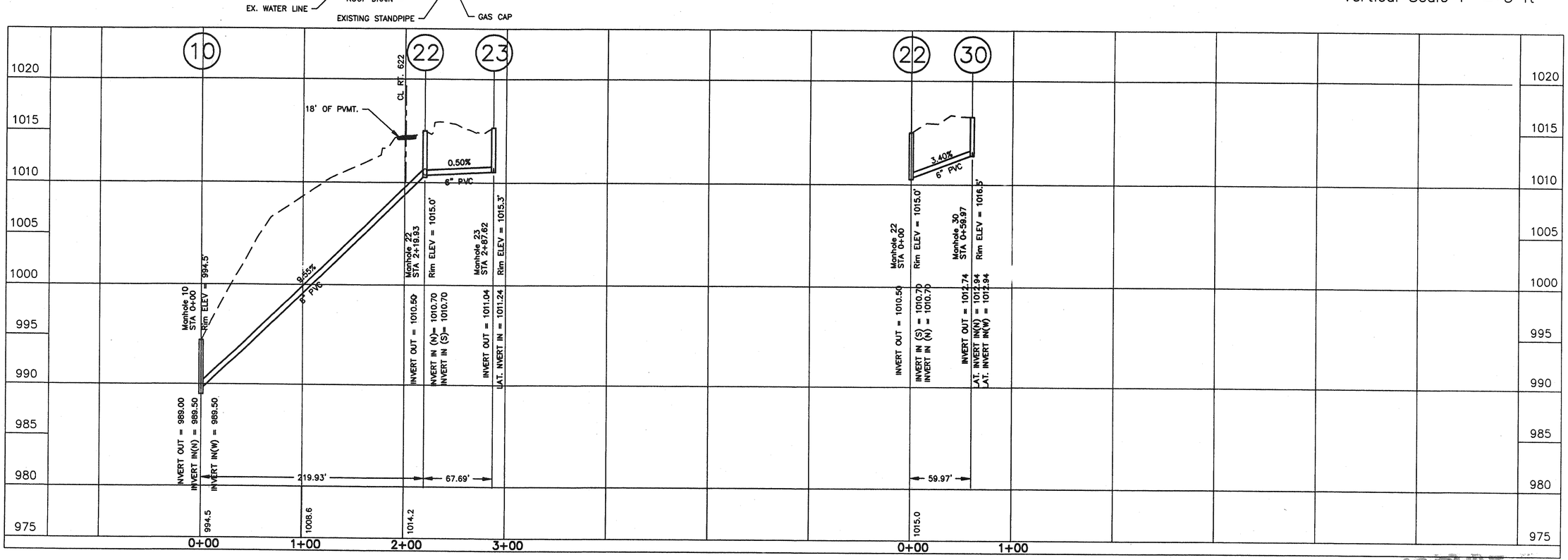
GRAPHIC SCALE

50 0 50 150

Horizontal Scale 1" = 50 ft

5 0 5 15

Vertical Scale 1" = 5 ft



AS-BUILT

FILE: WCELY 6/10/96 ACADVER13 NDM

ENGINEERING CONCEPTS INC.

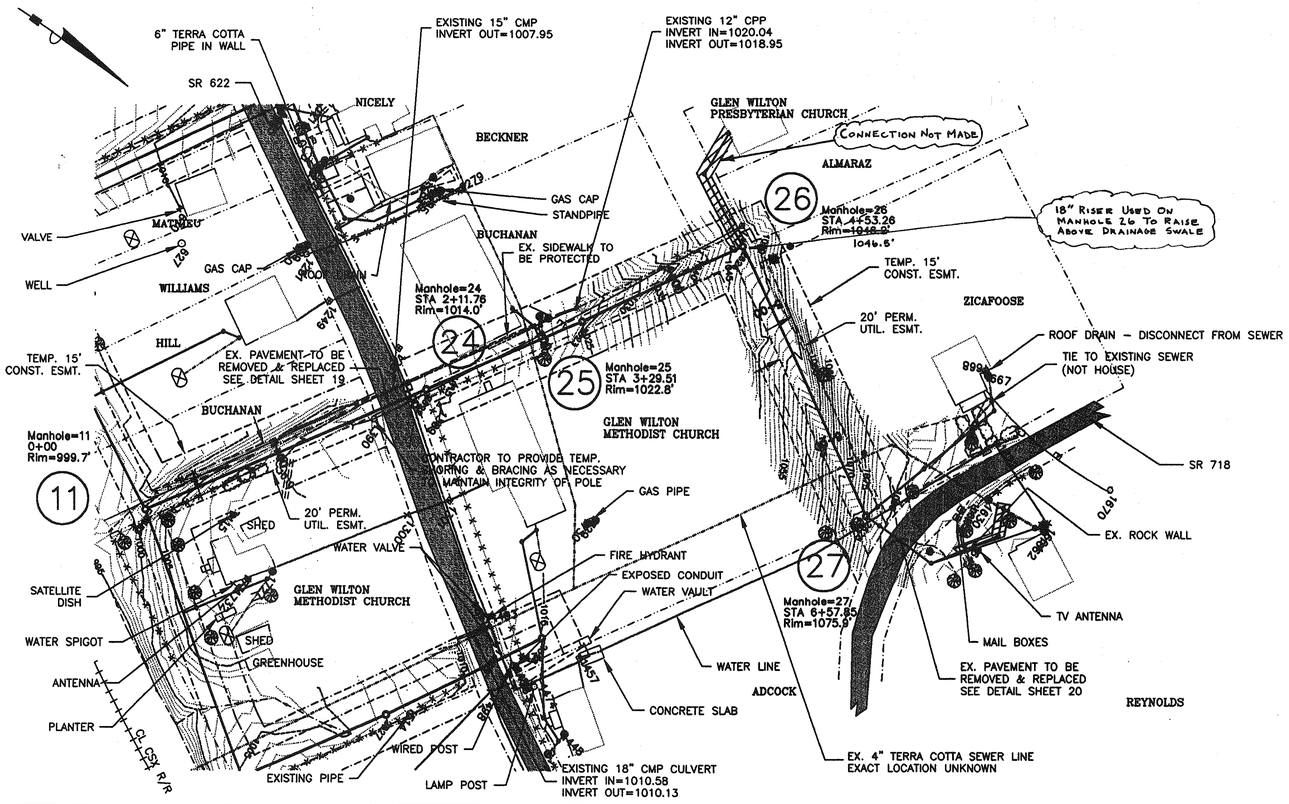
DESIGNED	NDM
DRAWN	RHW/NDM
CHECKED	WPJ
APPROVED	WPJ
SCALE	H: 1"=50' V: 1"=5'
DATE	JUNE '96
PROJECT	95045

REVISIONS		
NO.	DATE	BY

GLEN WILTON
SEWER SYSTEM IMPROVEMENTS
LINE "E" & "E1" AS-BUILT

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024328
6-11-96
PROFESSIONAL ENGINEER

SHEET NO. 8 OF 25



LEGEND

- UTILITY POLE
- CLEAN OUT
- BURIED ELECTRICAL
- SEPTIC TANK
- MANHOLE
- CULVERT
- POWER LINES
- FENCE
- DECIDUOUS TREE > 12" DIA.
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- CONIFEROUS TREE > 12" DIA.
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- SHRUBBERY
- WELL
- WATER METER
- FUEL TANK

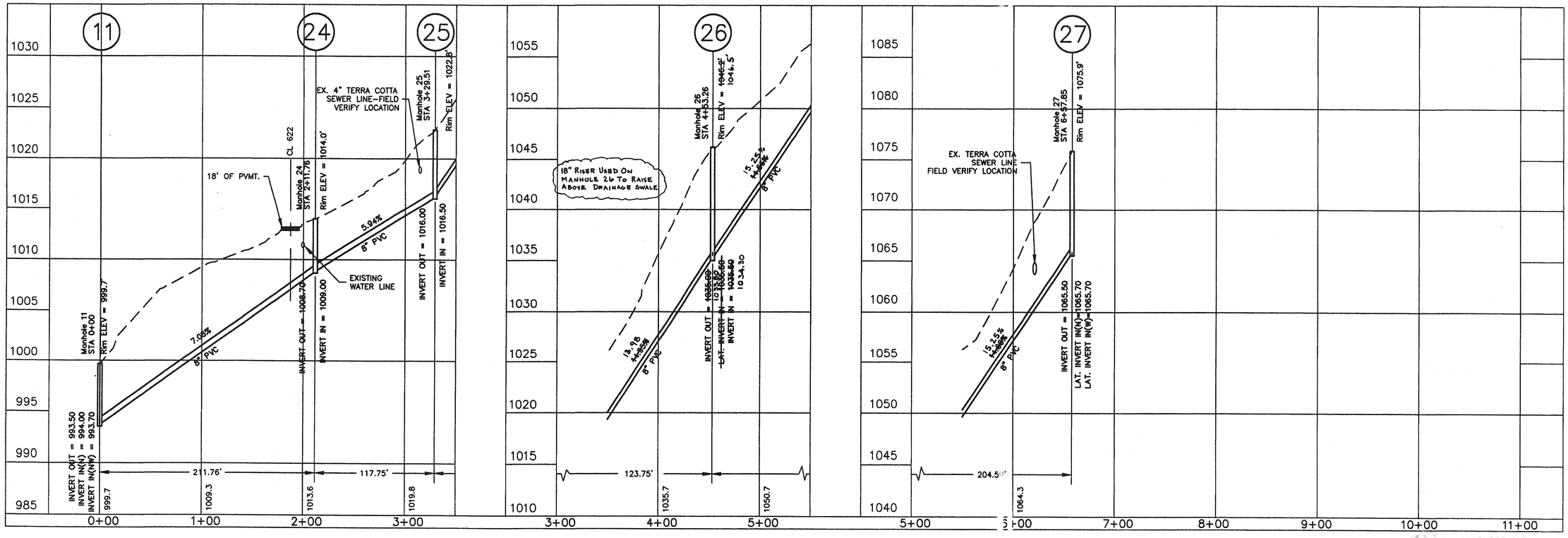
GRAPHIC SCALE

50 0 50 150

Horizontal Scale 1" = 50 ft

5 0 5 15

Vertical Scale 1" = 5 ft



AS-BUILT

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	RHW/NDM
CHECKED	WPJ
APPROVED	WPJ
SCALE	H:1"=50' V:1"=5'
DATE	JUNE '96
PROJECT	95045

REVISIONS		
NO.	DATE	BY

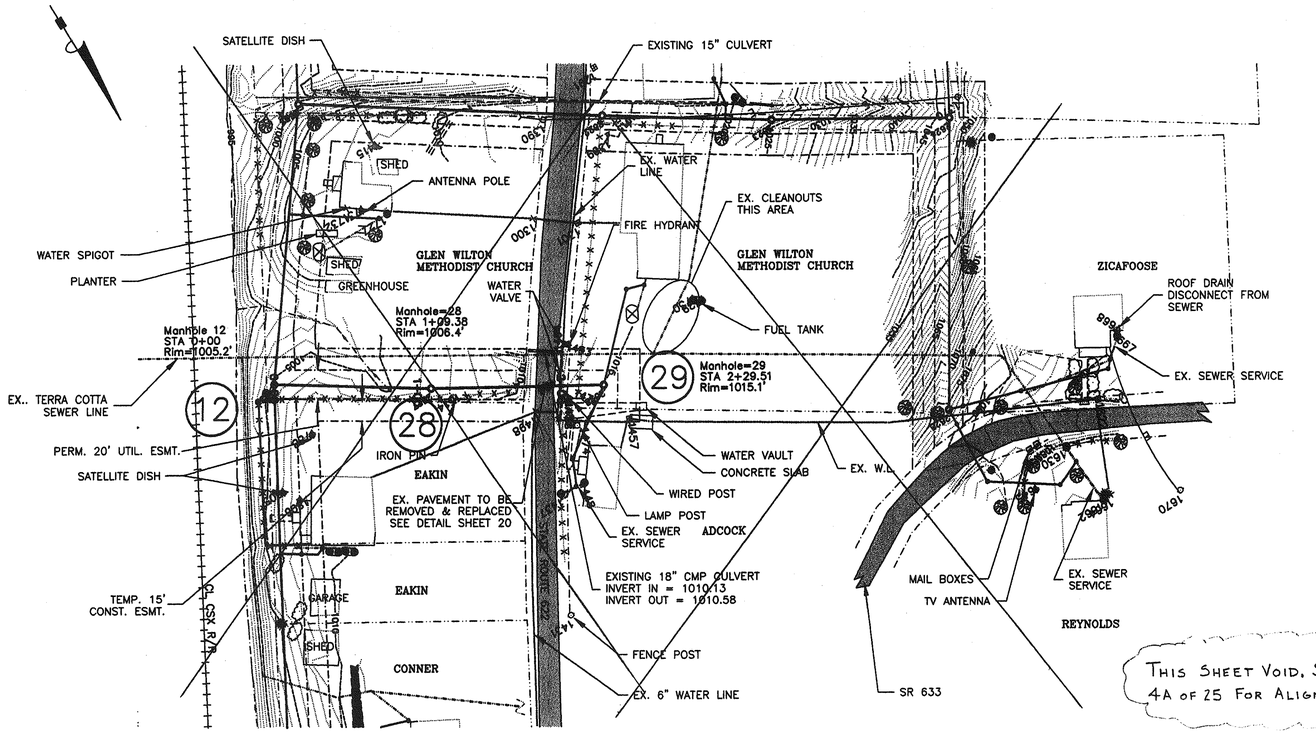
GLEN WILTON SEWER SYSTEM IMPROVEMENTS LINE "F"

As-Built

COMMONWEALTH OF PENNSYLVANIA
WILLIAM P. JOHNSON, II
No. 024328
6-11-96
PROFESSIONAL ENGINEER

SHEET NO. 9 OF 25

FILE: REYNOLDS 6/10/96 ACADVER13 HDM



THIS SHEET VOID, SEE SHEET 4A OF 25 FOR ALIGNMENT CHANGE.

LEGEND

- UTILITY POLE
- CLEAN OUT
- BURIED ELECTRICAL
- SEPTIC TANK
- MANHOLE
- CULVERT
- POWER LINES
- FENCE
- DECIDUOUS TREE > 12" DIA.
- DECIDUOUS TREE < 12" DIA.
- CONIFEROUS TREE > 12" DIA.
- CONIFEROUS TREE < 12" DIA.
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- WELL
- WATER METER
- FUEL TANK

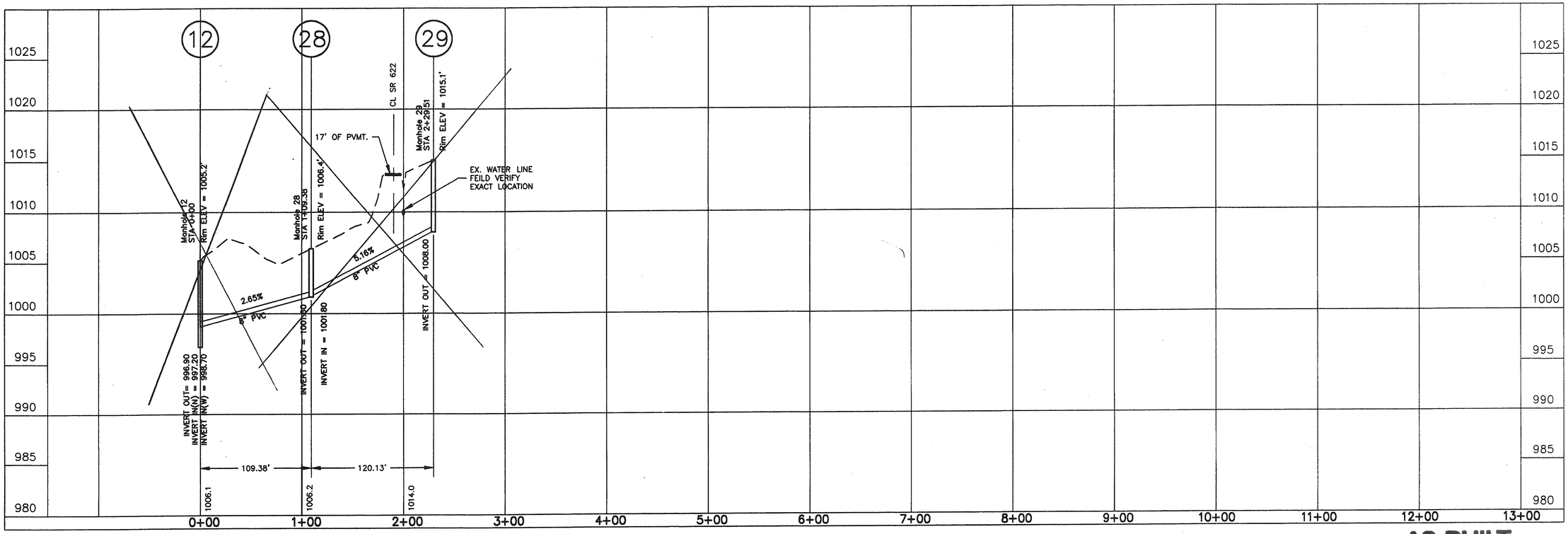
GRAPHIC SCALE

50 0 50 150

Horizontal Scale 1" = 50 ft

5 0 5 15

Vertical Scale 1" = 5 ft



AS-BUILT

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	RHW
CHECKED	WPJ
APPROVED	WPJ
SCALE	H:1"=50' V:1"=5'
DATE	JUNE '96
PROJECT	95045

REVISIONS		
NO.	DATE	BY

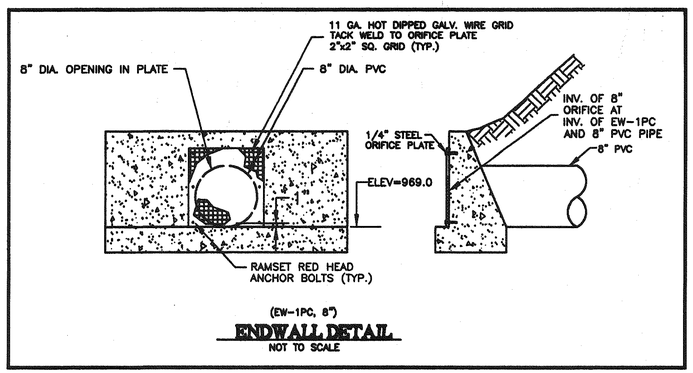
GLEN WILTON SEWER SYSTEM IMPROVEMENTS LINE "G"

As-Built

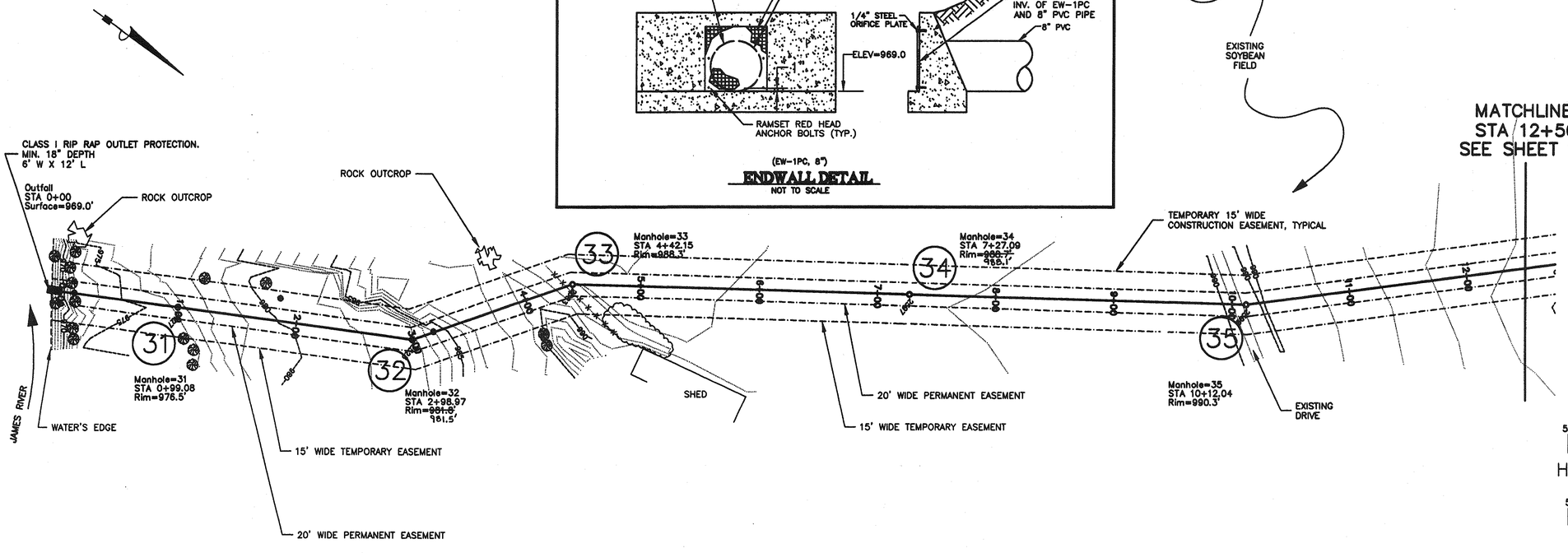
COMMONWEALTH OF KENTUCKY
WILLIAM P. JOHNSON, II
No. 024328
6-11-96
PROFESSIONAL ENGINEER

SHEET NO. 10 OF 24

FILE: ADCOCK 6/10/96 ACADVMR13.HDM



ENDWALL DETAIL
NOT TO SCALE



LEGEND

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- CULVERT
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- WATER METER
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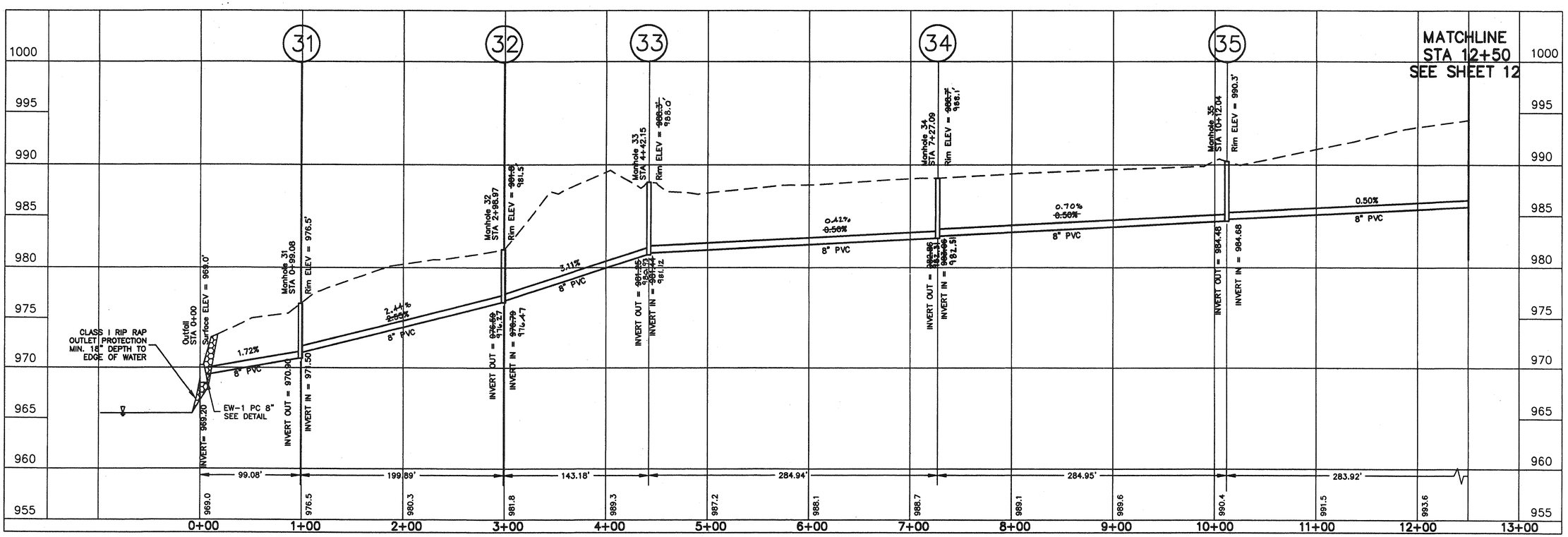
GRAPHIC SCALE

50 0 50 150

Horizontal Scale 1" = 50 ft

5 0 5 15

Vertical Scale 1" = 5 ft



AS-BUILT

FILE: EFFLUENT1 6/10/96 ACADVER13 R/W/ADM

ENGINEERING CONCEPTS INC.

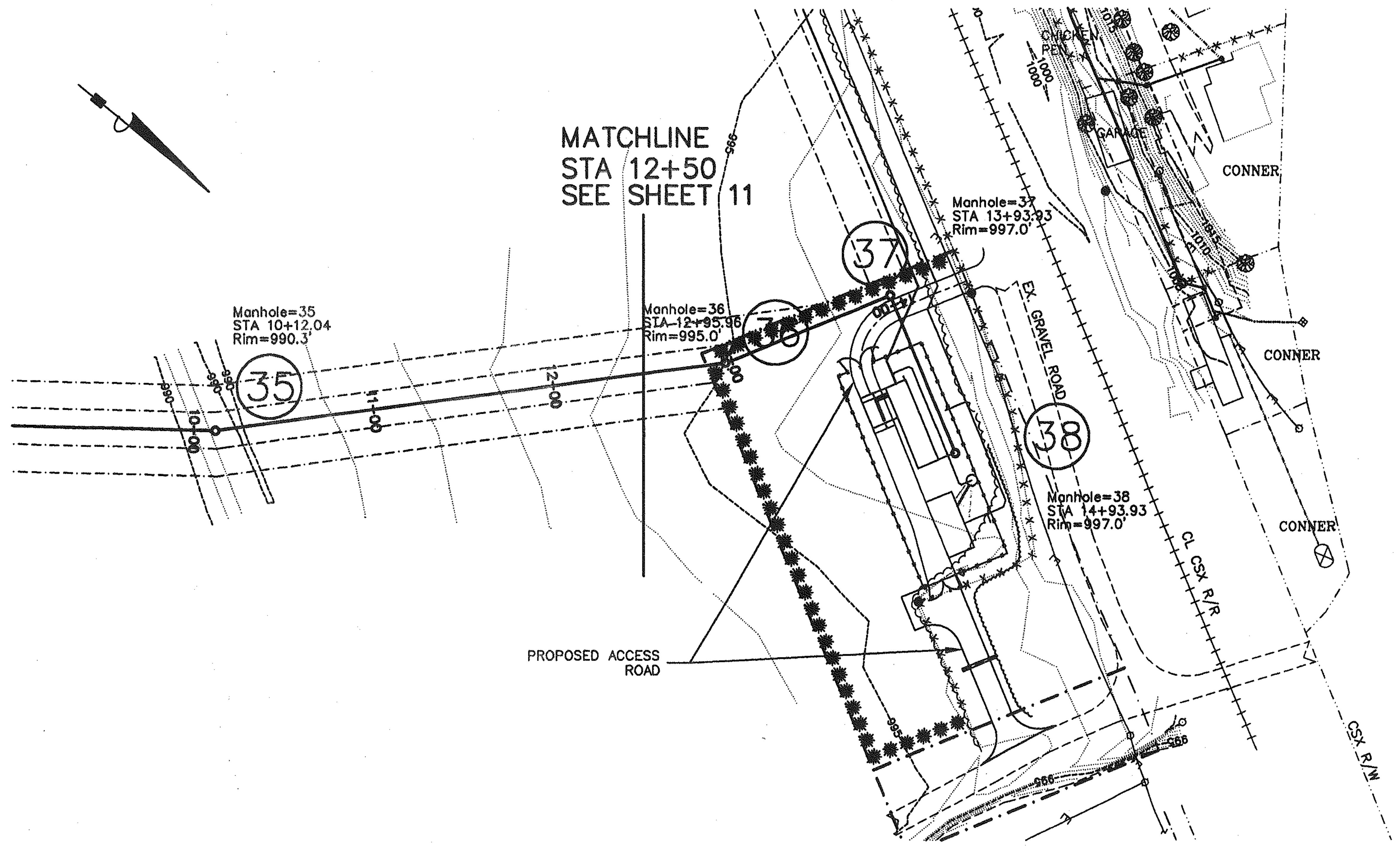
DESIGNED	NDM
DRAWN	RHW/NDM
CHECKED	WPJ
APPROVED	WPJ
SCALE	H:1"=50' V:1"=5'
DATE	JUNE '96
PROJECT	95045

REVISIONS		
NO.	DATE	BY

GLEN WILTON SEWER SYSTEM IMPROVEMENTS LINE "H" As-Built

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024328
PROFESSIONAL ENGINEER
6-11-96

SHEET NO. 11 OF 25



LEGEND

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- CULVERT
- POWER LINES
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- WELL
- WATER METER
- FUEL TANK

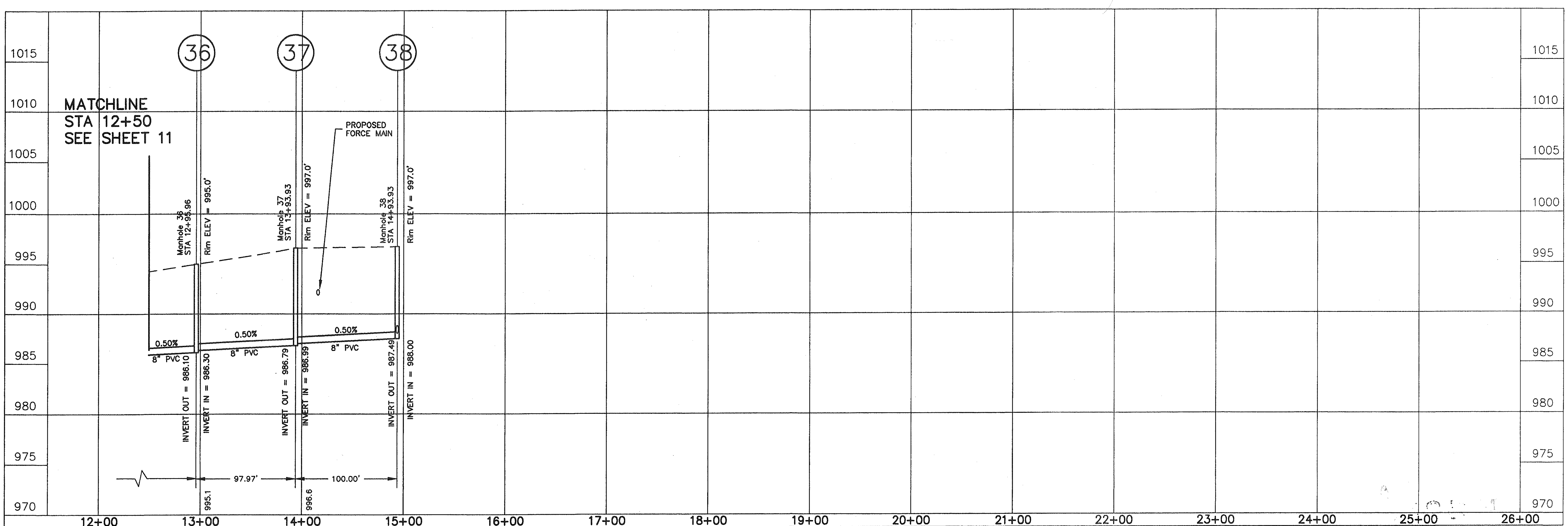
GRAPHIC SCALE

50 0 50 150

Horizontal Scale 1" = 50 ft

5 0 5 15

Vertical Scale 1" = 5 ft



AS-BUILT

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	RHW
CHECKED	WPJ
APPROVED	WPJ
SCALE	H: 1"=50' V: 1"=5'
DATE	APRIL '96
PROJECT	95045

REVISIONS

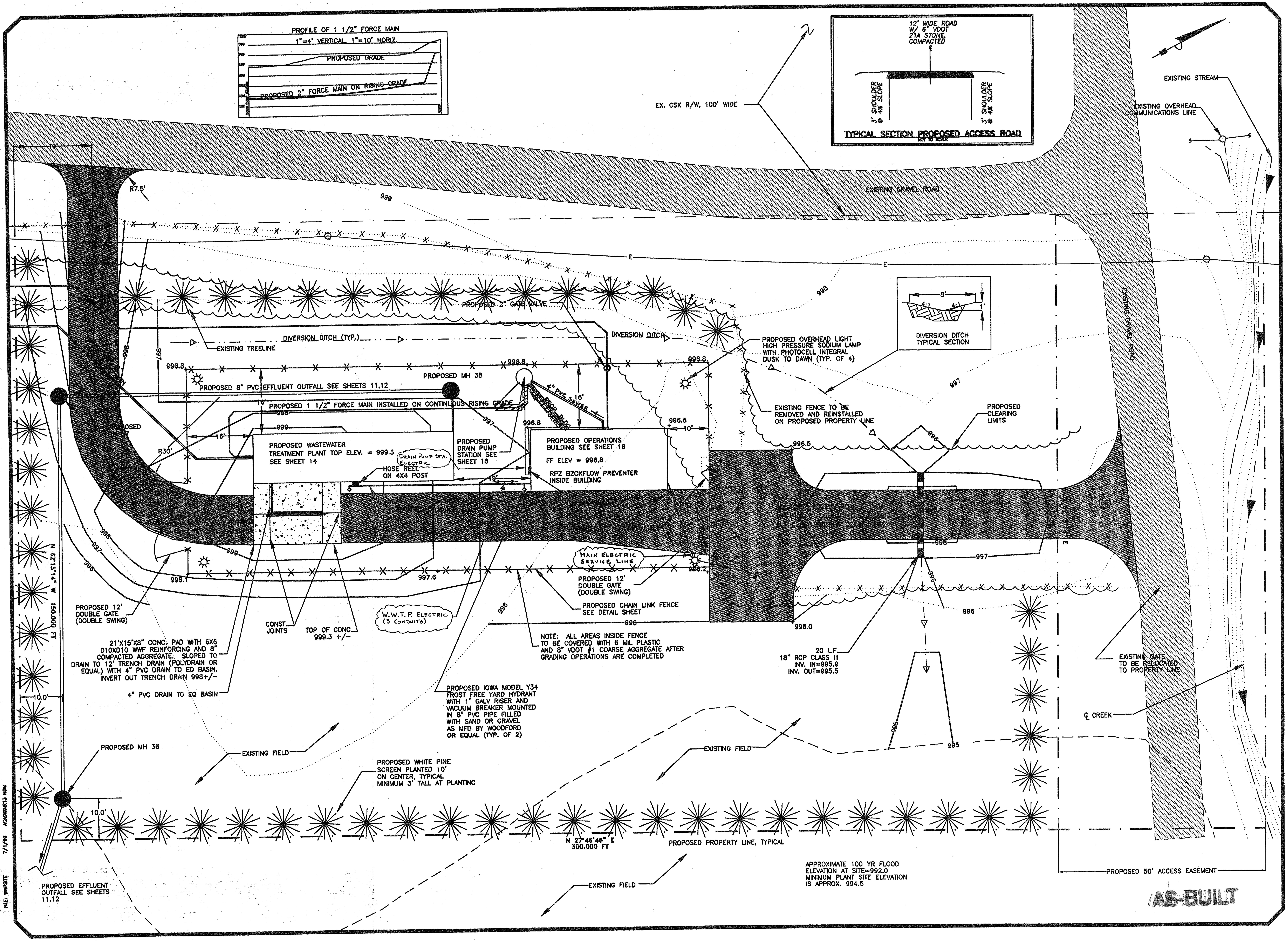
NO.	DATE	BY

AS-BUILT GLEN WILTON SEWER SYSTEM IMPROVEMENTS LINE "H"

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024328
4-30-96
PROFESSIONAL ENGINEER

SHEET NO. 12 OF 25

FILE: EFFLUENT2 4/26/96 ACADWIN R13 RHW



PROFILE OF 1 1/2" FORCE MAIN
1"=4' VERTICAL, 1"=10' HORIZ.
PROPOSED GRADE
PROPOSED 2" FORCE MAIN ON RISING GRADE
12' WIDE ROAD W/ 6" VDOT 21A STONE, COMPACTED
3' SHOULDER @ 4% SLOPE
3' SHOULDER @ 4% SLOPE
TYPICAL SECTION PROPOSED ACCESS ROAD
NOT TO SCALE
EX. CSX R/W, 100' WIDE
EXISTING STREAM
EXISTING OVERHEAD COMMUNICATIONS LINE
EXISTING GRAVEL ROAD
R7.5'
999
998
997
PROPOSED 2" GATE VALVE
DIVERSION DITCH (TYP.)
DIVERSION DITCH
EXISTING TREELINE
DIVERSION DITCH TYPICAL SECTION
PROPOSED OVERHEAD LIGHT HIGH PRESSURE SODIUM LAMP WITH PHOTOCELL INTEGRAL DUSK TO DAWN (TYP. OF 4)
EXISTING GRAVEL ROAD
996.8
PROPOSED MH 38
PROPOSED 8" PVC EFFLUENT OUTFALL SEE SHEETS 11,12
PROPOSED 1 1/2" FORCE MAIN INSTALLED ON CONTINUOUS RISING GRADE
4" PVC SEWER
EXISTING FENCE TO BE REMOVED AND REINSTALLED ON PROPOSED PROPERTY LINE
PROPOSED CLEARING LIMITS
PROPOSED MH 37
R30'
PROPOSED WASTEWATER TREATMENT PLANT TOP ELEV. = 999.3 SEE SHEET 14
DRAIN PUMP STA. ELECTRIC
PROPOSED DRAIN PUMP STATION SEE SHEET 18
PROPOSED OPERATIONS BUILDING SEE SHEET 16
FF ELEV = 996.8
RPZ BZCKFLOW PREVENTER INSIDE BUILDING
HOSE REEL ON 4X4 POST
996.5
PROPOSED ACCESS ROAD
998.1
997.6
MAIN ELECTRIC SERVICE LINE
PROPOSED 12' DOUBLE GATE (DOUBLE SWING)
PROPOSED CHAIN LINK FENCE SEE DETAIL SHEET
996.0
PROPOSED 12' DOUBLE GATE (DOUBLE SWING)
N 62°13'14" W 150.000 FT
W.W.T.P. ELECTRIC (3 CONDUITS)
CONST. JOINTS
TOP OF CONC. 999.3 +/-
NOTE: ALL AREAS INSIDE FENCE TO BE COVERED WITH 6 MIL PLASTIC AND 8" VDOT #1 COARSE AGGREGATE AFTER GRADING OPERATIONS ARE COMPLETED
21'X15'X8" CONC. PAD WITH 6X6 D10XD10 WWF REINFORCING AND 8" COMPACTED AGGREGATE. SLOPED TO DRAIN TO 12' TRENCH DRAIN (POLYDRAIN OR EQUAL) WITH 4" PVC DRAIN TO EQ BASIN. INVERT OUT TRENCH DRAIN 998+/-
4" PVC DRAIN TO EQ BASIN
20 L.F. 18" RCP CLASS III INV. IN=995.9 INV. OUT=995.5
EXISTING GATE TO BE RELOCATED TO PROPERTY LINE
PROPOSED IOWA MODEL Y34 FROST FREE YARD HYDRANT WITH 1" GALV RISER AND VACUUM BREAKER MOUNTED IN 8" PVC PIPE FILLED WITH SAND OR GRAVEL AS MFD BY WOODFORD OR EQUAL (TYP. OF 2)
10.0'
℄ CREEK
PROPOSED MH 36
EXISTING FIELD
EXISTING FIELD
995
PROPOSED WHITE PINE SCREEN PLANTED 10' ON CENTER, TYPICAL MINIMUM 3' TALL AT PLANTING
N 27°46'46" E 300.000 FT
PROPOSED PROPERTY LINE, TYPICAL
PROPOSED EFFLUENT OUTFALL SEE SHEETS 11,12
EXISTING FIELD
APPROXIMATE 100 YR FLOOD ELEVATION AT SITE=992.0 MINIMUM PLANT SITE ELEVATION IS APPROX. 994.5
PROPOSED 50' ACCESS EASEMENT
AS-BUILT
FILE: WWPSITE 7/1/96

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	NDM/RHW/SCG
CHECKED	WPJ
APPROVED	WPJ
SCALE	1"=10'
DATE	JULY '96
PROJECT	95045

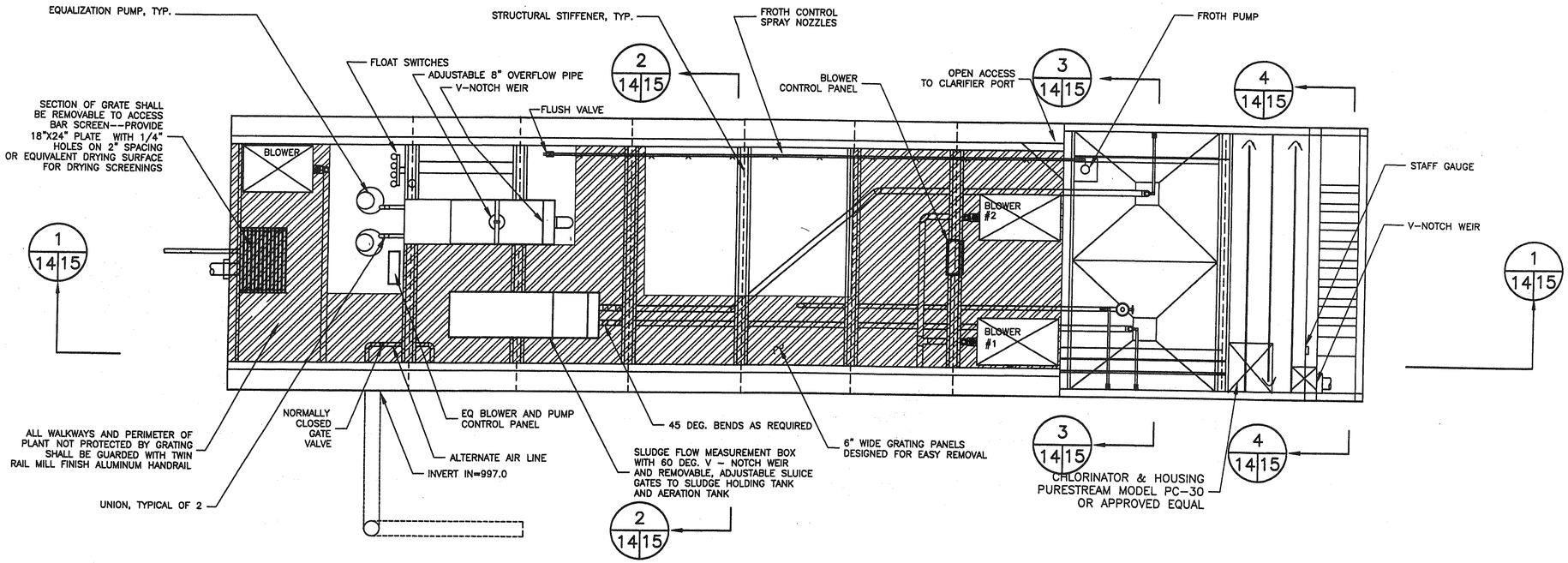
REVISIONS

NO.	DATE	BY

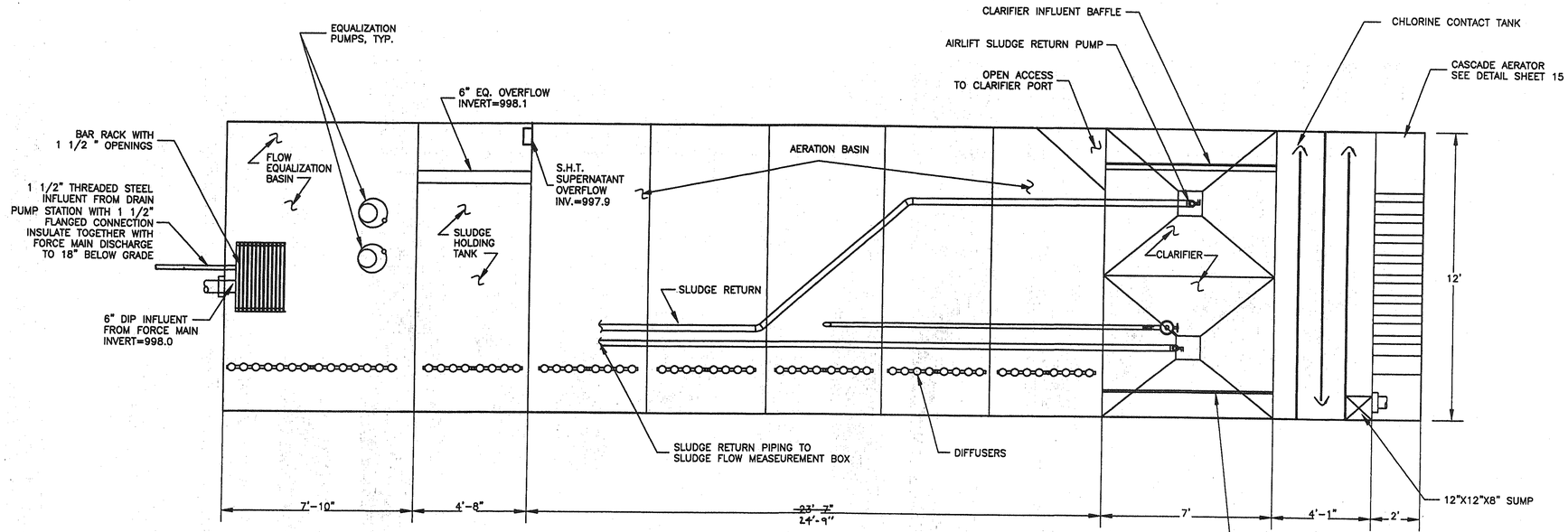
GLEN WILTON As-Built
SEWER SYSTEM IMPROVEMENTS
TREATMENT PLANT SITE PLAN

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024328
7-1-96
PROFESSIONAL ENGINEER

SHEET NO. 13 OF 25



UPPER PLAN VIEW
SCALE: 3/8"=1'



LOWER PLAN VIEW
SCALE: 3/8"=1'

VOLUMES

SURGE TANK	S.H.T.	AERATION TANK	C.C.T.
6,670 GAL.	4000 GAL.	20,000 GAL.	830 GAL.

AS-BUILT

FILE: WWTP1 7/1/96 ACADVER13 MDM

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	RHW/NDM
CHECKED	WPJ
APPROVED	WPJ
SCALE	3/8"=1'
DATE	JULY '96
PROJECT	95045

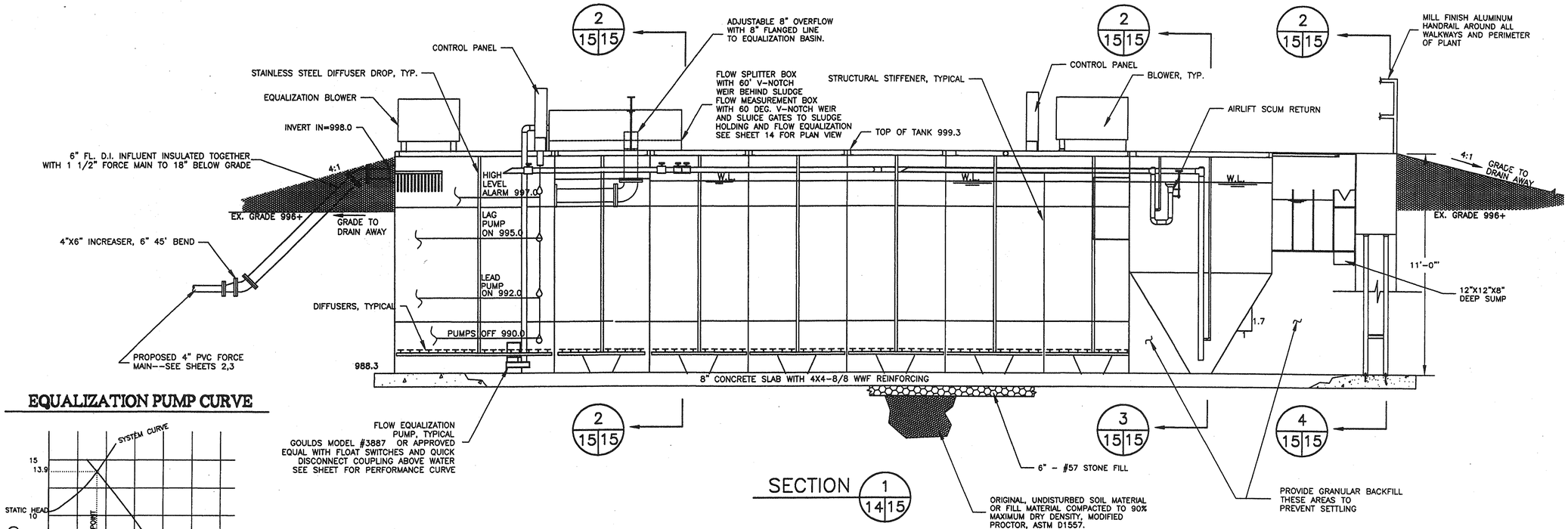
REVISIONS

NO.	DATE	BY

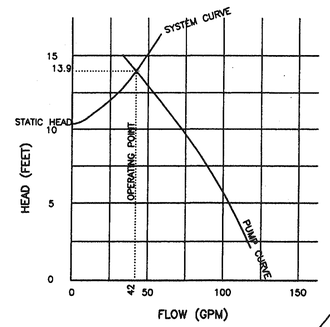
GLEN WILTON As-Built
SEWER SYSTEM IMPROVEMENTS
WASTEWATER PLANT

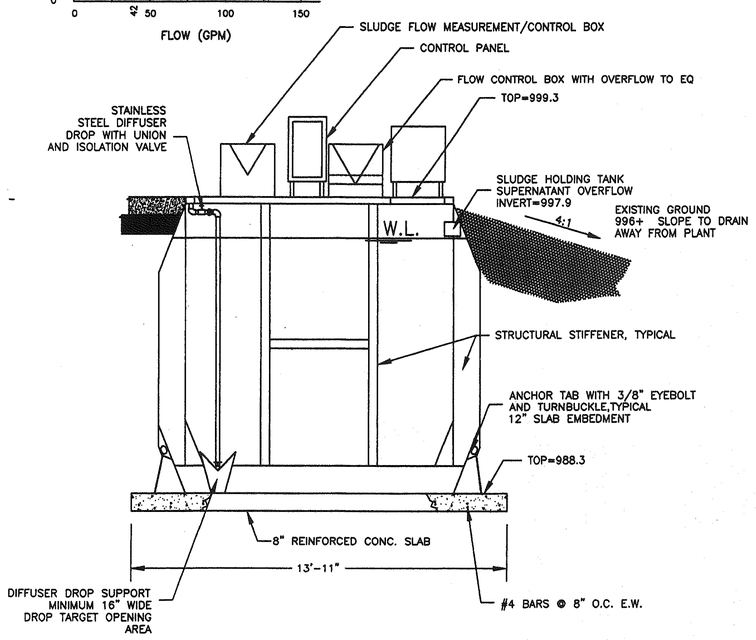
COMMONWEALTH OF PENNSYLVANIA
WILLIAM P. JOHNSON, II
No. 024328
7-1-96
PROFESSIONAL ENGINEER

SHEET NO. 14 OF 25

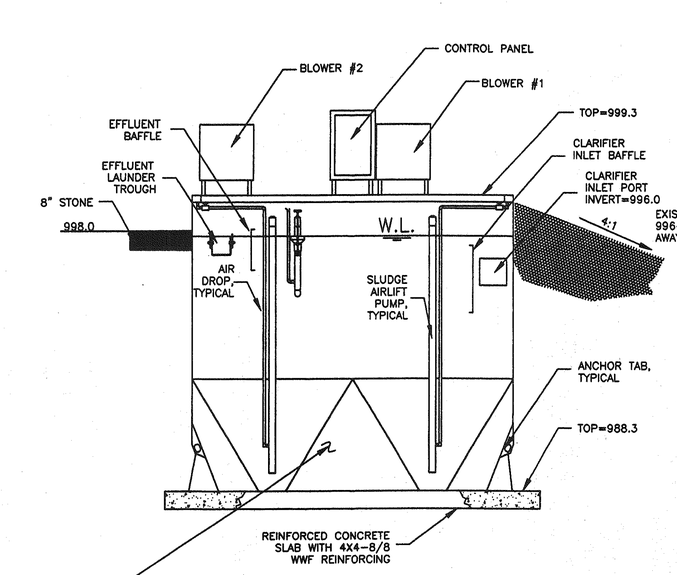


EQUALIZATION PUMP CURVE

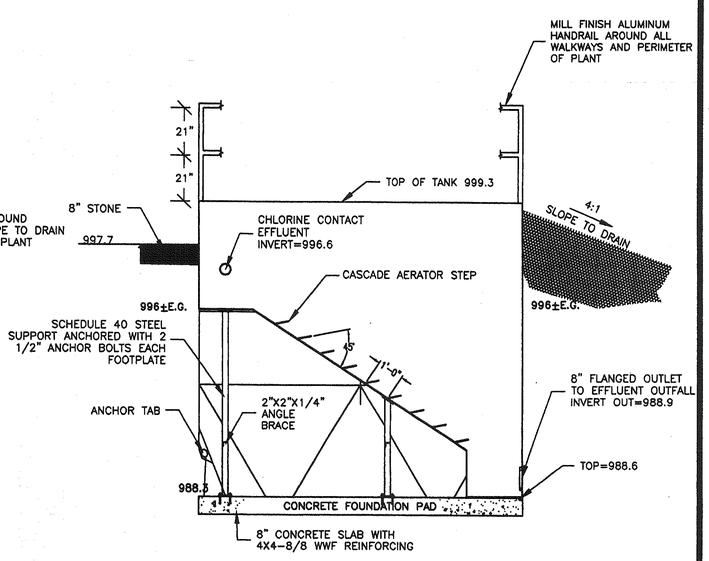




SECTION 2 / 14|15



SECTION 3 / 15|15



SECTION 4 / 14|15

AS-BUILT

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	RHW/NDM
CHECKED	WPJ
APPROVED	WPJ
SCALE	3/8"=1'
DATE	JUNE '96
PROJECT	95045

REVISIONS		
NO.	DATE	BY

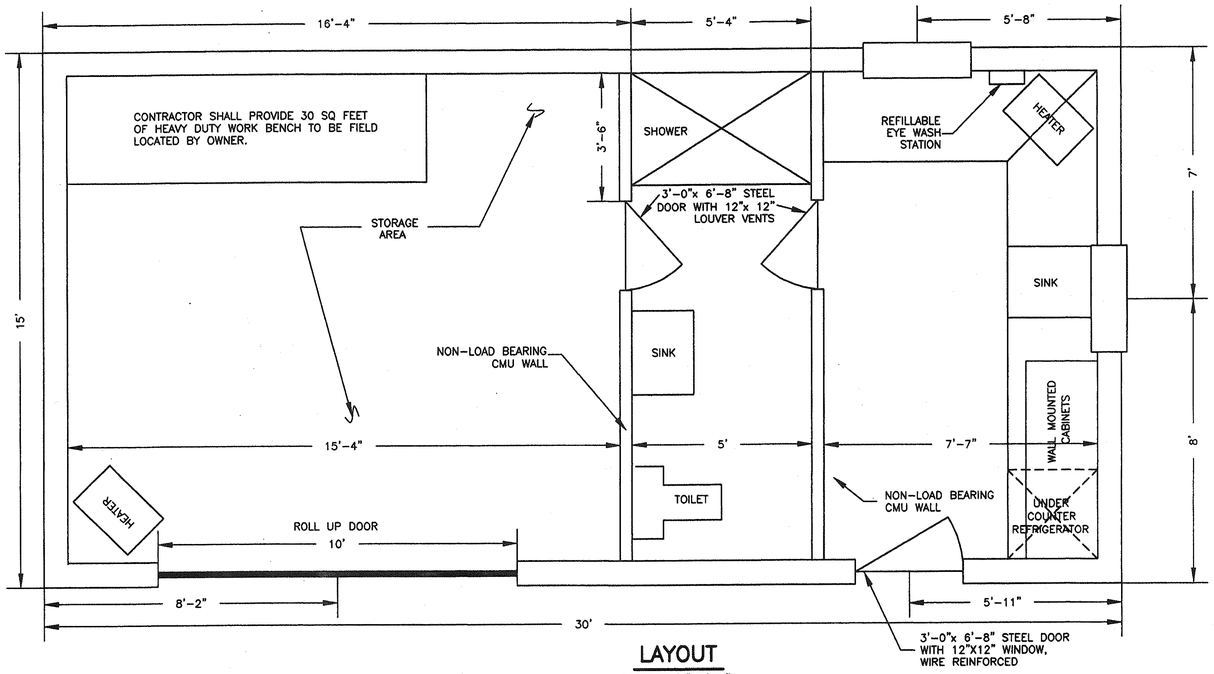
GLEN WILTON As-Built
SEWER SYSTEM IMPROVEMENTS
WASTEWATER PLANT SECTIONS

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 09328
PROFESSIONAL ENGINEER
6-11-96

SHEET NO. 15 OF 25

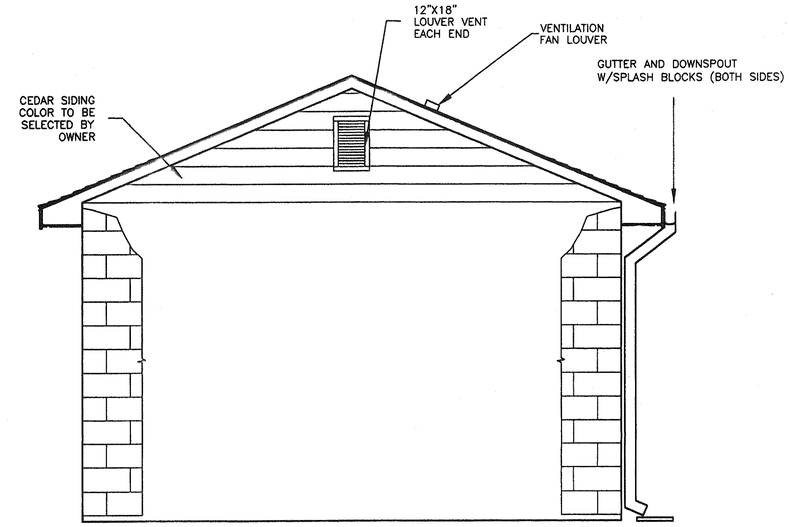
FILE: WWTPSEC 6/11/96 ADDWWR13.MDM

AS-BUILT



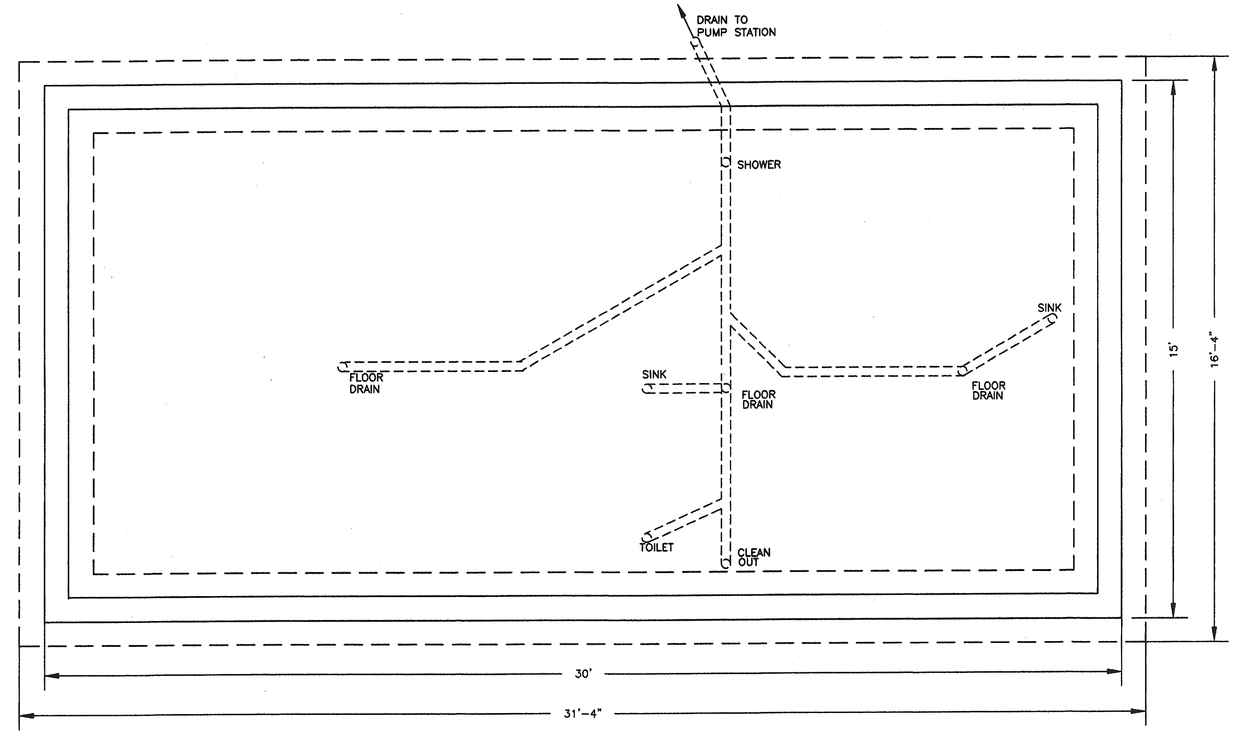
LAYOUT

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



REAR ELEVATION

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

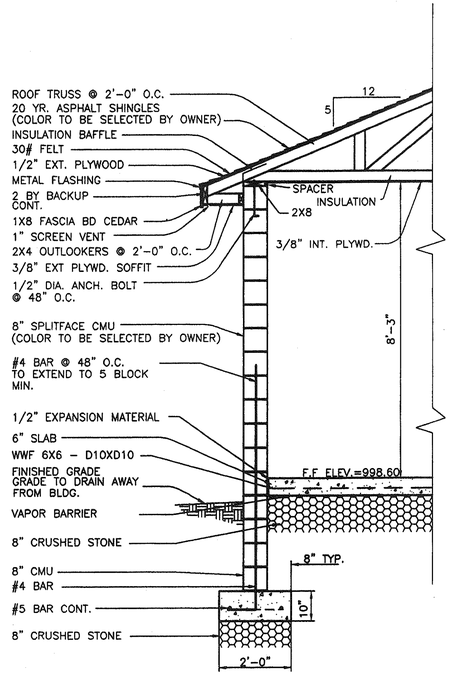


FOUNDATION PLAN

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

EQUIPMENT SCHEDULE

ITEM DESCRIPTION	MODEL #[USA BLUE BOOK #]
RAVEN PROCESS CONTROL PACKAGE INCLUDING: 1 CENTRIFUGE 6 TWC TUBES (19MM) 3 SETTLEOMETER KITS 1 CORETAKER	[41430]
DIGITAL CHLORINE ANALYZER	LAMOTTE/3670DC1100 [34410]
DO METER	YSI 51-B [40125]
DO PROBE	YSI 5740-25 [40120]
DO PROBE CABLE (25')	YSI 5740-25 [40180]
Ph METER	PH2 [51769]
6.0 CU. FT. REFRIGERATOR	SEARS OR EQUAL
FISHER 4.0 BUFFER SOLUTION	SB101-500
FISHER 7.0 BUFFER SOLUTION	SB107-500
FISHER 10.0 BUFFER SOLUTION	SB115-500
FISHER WASH BOTTLES	0J-409-22A (6)
2 LITER SAMPLE CONTAINERS	NALGENE 11-815-11A (6)
250 ml SAMPLE CONTAINERS	NALGENE 02-893-4C (72)
1000 ml BEAKERS	FISHER 02-540P (6)
600 ml BEAKERS	FISHER 02-540M (6)
100 ml BEAKERS	FISHER 02-540H (12)
50 ml BEAKERS	FISHER 02-540G (12)
FLOWMETER	ISCO 4210
SAMPLER	ISCO 2910
WATER HEATER	CHRONOMITE S23, 230V 1 PH., 11 AMP, 2300 WATT
HOSE BIBB W/VACUUM BRKR.	3/4" HEAVY DUTY (AS REQ'D)
HOSE REEL	HEAVY GA. STEEL, WALL MTD. SMC #1P815 (2)
HOSE NOZZLE	STRAIGHT, SOLID BRASS SHERMAN 155-C (2)
HOSE	3/4" COMMERCIAL DUTY RUBBER - 50' LENGTH (2)
EYE WASH STATION	NORTH MODEL 12-60-42 DUAL EYEWASH STATION
WINDOWS	PELLA STD. CLAD CASEMENT 3' 6-1/2" X 2' 9-3/4" (2)
TOILET,SHOWER,SINK	AMERICAN STANDARD
FIRE EXTINGUISHER	LAB SFTY. SUPPLY, P1123 (2)
FIRST AID KIT	JOHNSON & JOHNSON, B3244
STOOL	HAMILTON 950M478 (2)
CABINETS	MERILLATT(48 SF)COUNTERTOP



TYPICAL WALL SECTION

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

AS-BUILT

AS-BUILT

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	NDM/SCG/RHW
CHECKED	WPJ
APPROVED	WPJ
SCALE	1/2"=1'
DATE	JUNE '96
PROJECT	95045

REVISIONS		
NO.	DATE	BY

GLEN WILTON As-Built
SEWER SYSTEM IMPROVEMENTS
OPERATIONS BUILDING

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 023328
6-11-96
PROFESSIONAL ENGINEER

SHEET NO. 16 OF 25

FILE: OPBLDG 6/11/96 ACADVMR13 NDM

NOTE:
APPROXIMATE 100 YR. FLOOD ELEVATION AT SITE IS 990.6. THE MINIMUM SITE ELEVATION IS APPROXIMATELY 984.0.

MANHOLE #3

PROPOSED 4" FORCEMAIN

EXISTING TREE TO REMAIN

EXISTING HOUSE LOUISE M. REYNOLDS

EXISTING WATER LINE

4' SEPARATION, TYPICAL

10.00'

15.00'

CONTRACTOR TO VERIFY LOCATION OF EXISTING WATER LINE AND CONNECT PUMP STATION WATER SERVICE

PROPOSED WATER METER SEE DETAIL SHEET 21

PERMANENT UTILITY EASEMENT (WIDTH VARIES)

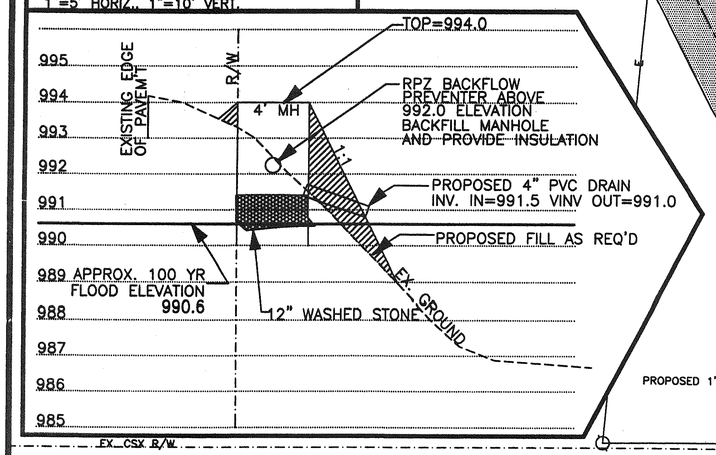
TEMPORARY 10' CONSTRUCTION EASEMENT

PROPOSED ACCESS ROAD

PROPOSED 4" FORCE MAIN

SLP 6.22

SECTION OF PROPOSED RPZ BACKFLOW PREVENTER INSTALLATION IN MANHOLE
1"=5' HORIZ., 1"=10' VERT.



PROPOSED 1" WATER SERVICE

EXISTING R/W

BRUSH LINE

1" GATE VALVE, RPZ BACKFLOW PREVENTER, AIR RELIEF VALVE IN 4' DIA MH WITH DRAIN TO ATMOSPHERE WITH END SCREEN

EXISTING TREES TO REMAIN IF POSSIBLE

PROPOSED ELECTRICAL SERVICE BY VA POWER

PROPOSED MODEL Y34 FROST FREE YARD HYDRANT W/ 1" GALV. RISER & VACUUM BREAKER MOUNTED IN 8" PVC PIPE FILLED WITHSAND OR GRAVEL AS MFG BY WOODFORD, OR EQUAL, TYPICAL OF 2, WITH 1 50' HOSE AND HOSEREEL

TIE PROPOSED SWALE INTO EXISTING SWALE

EXISTING FENCE TO BE REMOVED AS NECESSARY FOR INSTALLATION OF PROPOSED FENCE

MANHOLE #1

EXISTING FENCE ALONG RAILROAD RIGHT-OF-WAY, TO BE REMOVED AS NECESSARY FOR INSTALLATION OF PROPOSED CHAIN LINK FENCE

PROPOSED SWALE

PROPOSED SWALE

Valve Vault Alignment Change

PROPOSED 8" GRAVITY SEWER

① OVERHEAD ELECTRICAL SERVICE POLE BY VA. POWER
② CONTROL PANEL AND OVERHEAD ELECTRICAL SERVICE DISCONNECT MOUNTED ON PLATFORM AT POLE. MOUNT DUSK TO DAWN LIGHT ON POLE—SEE SHEET 20

PROVIDE DEDICATED PHONE LINE

PROPOSED VALVE VAULT

MANHOLE #2

3' ACCESS GATE

12' DOUBLE GATE

PROPOSED PROPERTY LINE

PROPOSED SILT FENCE (SF)

PROPOSED LIFT STATION SEE SHEET 18

PROPOSED WHITE PINE SCREEN 10' ON CENTER, TYPICAL MINIMUM HEIGHT AT PLANTING THREE FEET TALL

6" VDOT #1 COARSE AGGREGATE ON 6 MIL BLACK POLYETHYLENE PLASTIC WITHIN LIMITS OF FENCE

EX. CSX R/W

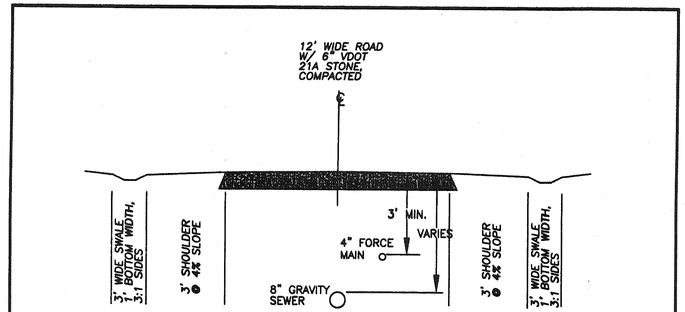
CSX RAILROAD

EX. CSX R/W

CSX RAILROAD

EX. CSX R/W

AS-BUILT



TYPICAL SECTION PROPOSED ACCESS ROAD
NOT TO SCALE

PROPERTY OF C.M. REYNOLDS & LOUISE M. REYNOLDS (SISTER)

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	NDM
CHECKED	WPJ
APPROVED	WPJ
SCALE	1" 20'
DATE	SEP '96
PROJECT	95045

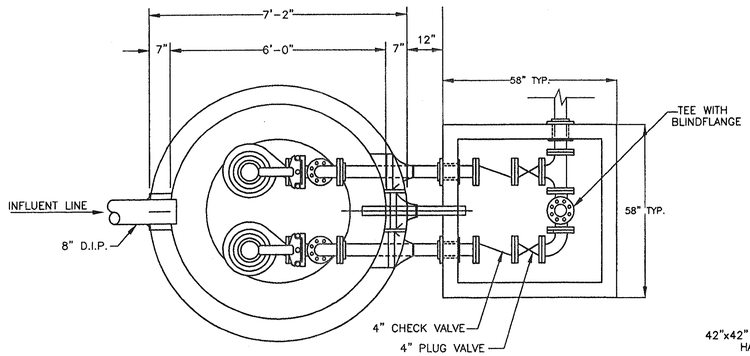
REVISIONS		
NO.	DATE	BY
1	9/16/96	NDM
	REVISE LOT AND EASEMT LINES	

GLEN WILTON COMMUNITY
SEWER SYSTEM IMPROVEMENTS
PUMP STATION SITE PLAN
As-Built

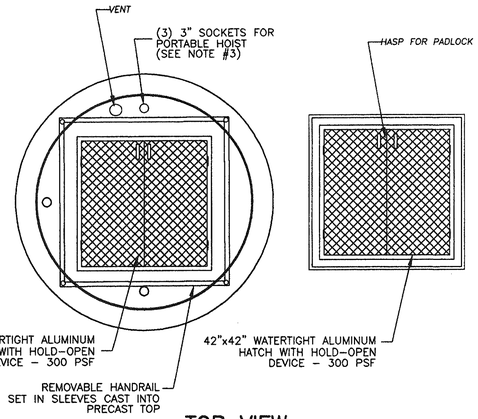
COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024328
PROFESSIONAL ENGINEER
9-23-96

SHEET NO. 17 OF 25

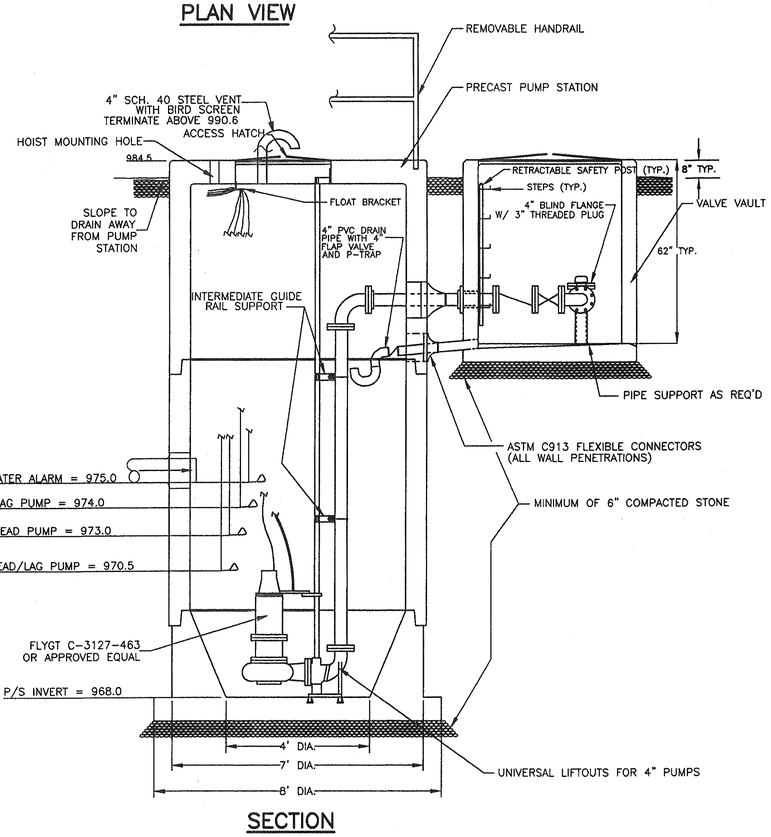
FILE: PSTAS12 9/16/96 ACADVER13 NDM



PLAN VIEW



TOP VIEW



SECTION

NOTES

1. PUMP STATION MANUFACTURER SHALL SUPPLY OPENINGS IN CONCRETE FOR CONDUIT ENTRY.
2. FLOAT, POWER, AND CONTROL CABLES SHALL BE RUN TO PANEL THROUGH CONDUIT.
3. PUMP STATION MANUFACTURER SHALL VERIFY FIT OF LIFTOUT ELBOWS, PUMPS, AND HATCH.
4. FLOAT SWITCHES SHALL BE LOCATED AWAY FROM INFLUENT STREAM.
5. ALL WIRING BELOW 990.6 SHALL BE WATER PROOF.
6. SEE SHEET 20 FOR CONTROL PANEL MOUNTING AND PLATFORM

DRAIN PUMP STATION

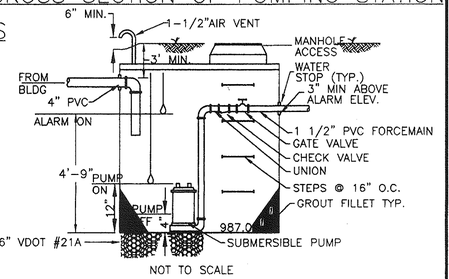
NOTES:

1. THE WATERLINE TO THE BUILDING MUST MAINTAIN A 10' HORIZONTAL SEPARATION AND A 1.5' VERTICAL SEPARATION FROM THE FORCE MAIN.
2. PUMP STATION SHALL HAVE A MINIMUM 10' SEPARATION FROM ALL FOOTINGS AND WATER LINES.
3. PUMP STATION TO BE 4.0' I.D. MANHOLE WITH A MINIMUM 6' DEPTH & MONOLITHIC BASE. JOINTS, WHERE NECESSARY, TO BE MADE WATERTIGHT UTILIZING BUTYL-O-RING.
4. CONTROLS SHALL BE MOUNTED INSIDE THE BUILDING.

SYSTEM CHARACTERISTICS

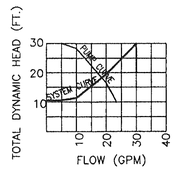
BUILDING FLOOR ELEVATION	996.8
PUMP STATION INVERT	987.0
LENGTH OF FORCE MAIN	90.0'
FRICTION HEAD @ Q=18 GPM	8.0'
STATIC HEAD	10.5'
TOTAL SYSTEM HEAD	18.5'
DESIGN FLOW (Q)	18 GPM

CROSS SECTION OF PUMPING STATION



NOT TO SCALE

PERFORMANCE CURVE



PUMP CHARACTERISTICS

MODEL: MEYERS WG-20 SUBMERSIBLE SEWAGE GRINDER PUMP OR EQUAL, WITH DOUBLE PIGGYBACK MERCURY FLOATSWITCHES, 3/8" IMPELLER

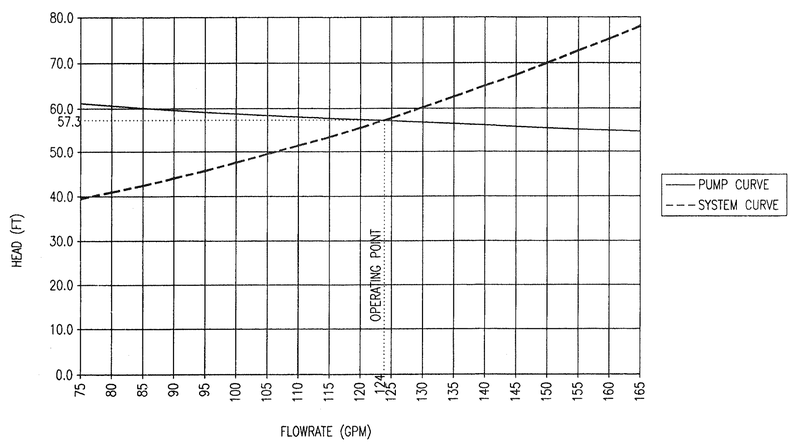
ALARM: MEYERS: ALC-8P VISUAL ALARM

DESIGN POINT: 18 GPM

TOTAL DESIGN HEAD: 18' TDH @ 18 GPM

MOTOR: 230V, 4/10 HP, SINGLE PHASE 60 Hz, 2" NPT

PUMP & SYSTEM CURVES



AS-BUILT

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	NDM/SCG/RHW
CHECKED	WPJ
APPROVED	WPJ
SCALE	AS NOTED
DATE	APRIL '96
PROJECT	95045

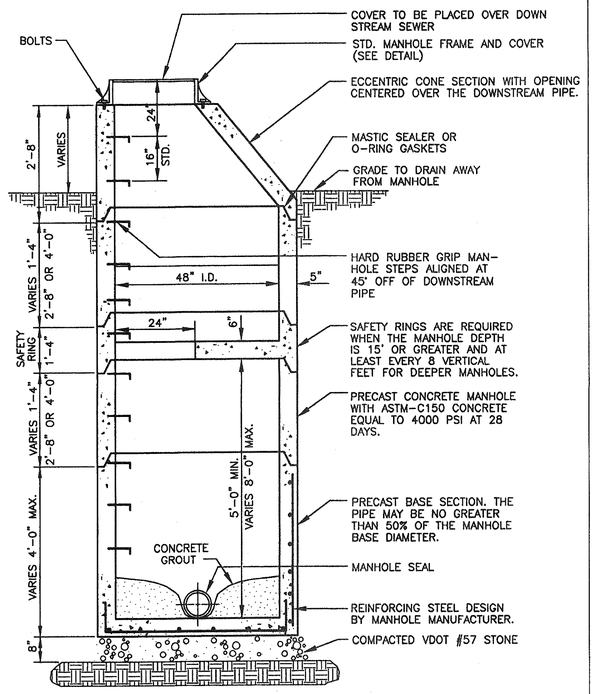
REVISIONS		
NO.	DATE	BY

GLEN WILTON AS-BUILT
SEWER SYSTEM IMPROVEMENTS
PUMP STATION PLAN

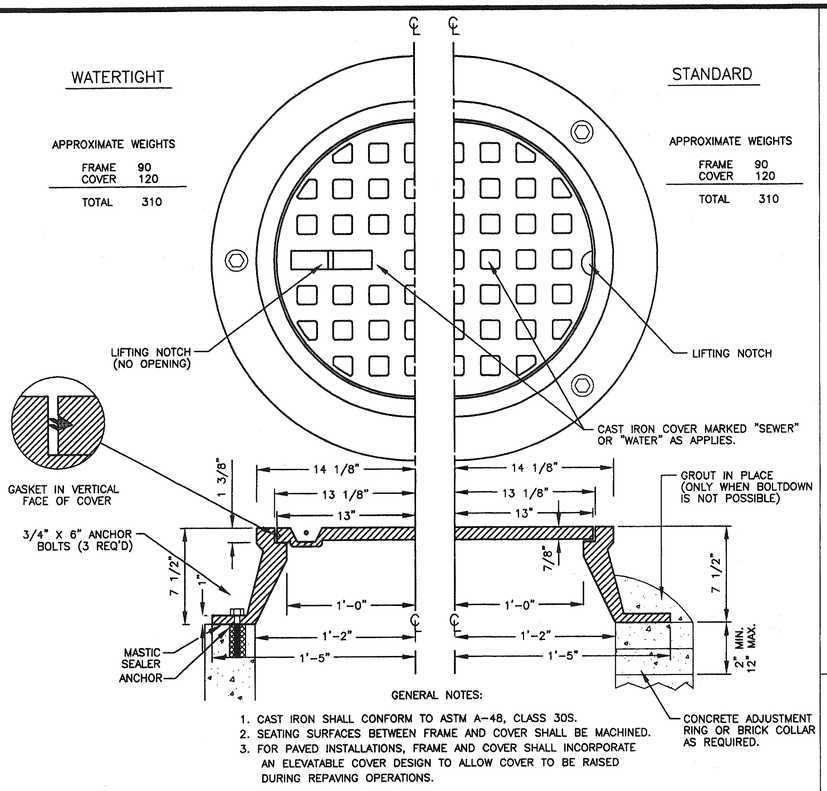
COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024328
4-11-96
PROFESSIONAL ENGINEER

SHEET NO. 18 OF 25

FILE: PSTA 4/29/96 ACADWINR13 RHW



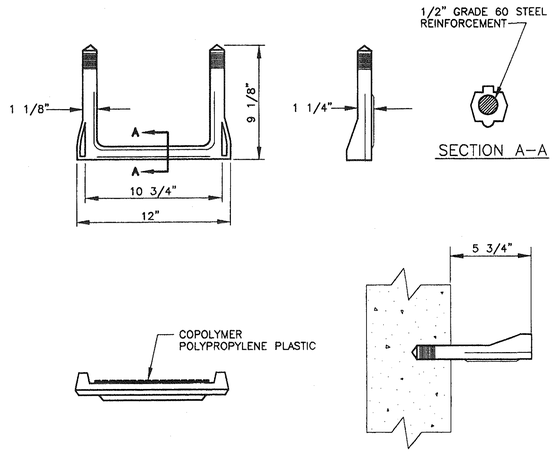
PRECAST ECCENTRIC MANHOLE



GENERAL NOTES:

1. CAST IRON SHALL CONFORM TO ASTM A-48, CLASS 30S.
2. SEATING SURFACES BETWEEN FRAME AND COVER SHALL BE MACHINED.
3. FOR PAVED INSTALLATIONS, FRAME AND COVER SHALL INCORPORATE AN ELEVATABLE COVER DESIGN TO ALLOW COVER TO BE RAISED DURING REPAVING OPERATIONS.

MANHOLE FRAME AND COVER



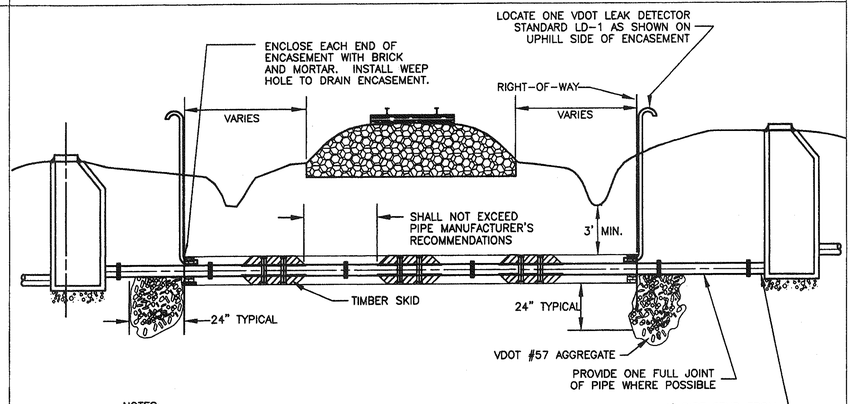
MANHOLE STEP DETAIL

PLAN

PROFILE

ALL LATERAL LINES SHALL BE 4" DIA. PVC SCH. 40.

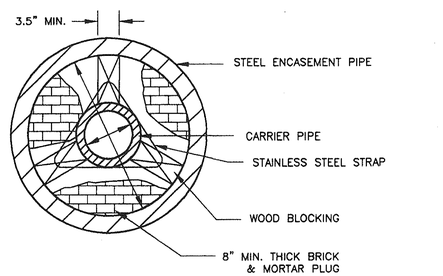
TYPICAL SERVICE CONNECTION WITH CLEANOUT

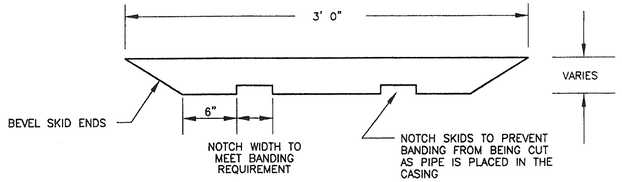


NOTES:

1. SLOPE ENCASEMENT TO MATCH SLOPE OF ENCASED SEWER AS SHOWN ON PLANS.
2. STEEL ENCASEMENT PIPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A139 FOR THE CLASS AND THICKNESS SPECIFIED AND SHALL HAVE BEVELED EDGES SUITABLE FOR FIELD WELDING. WALL THICKNESS OF PIPE SHALL BE 0.312" MINIMUM.
3. CARRIER PIPE SHALL BE FLANGED DUCTILE IRON.
4. CARRIER PIPE SHALL BE WRAPPED WITH TAR PAPER AT MASONRY PLUG.
5. MASONRY PLUG SHALL BE WATERTIGHT.
6. FOR OPEN CUT INSTALLATIONS:
   A. CONTRACTOR SHALL REPLACE CUT MATERIAL WITH APPROVED CRUSHED AGGREGATE AND SHALL ACHIEVE 95% COMPACTION PER VDOT REQUIREMENTS.
   B. CONTRACTOR SHALL MATCH EXISTING PAVEMENT CROSS SECTION AND SHALL REPLACE PAVEMENT AND SURFACE TO ORIGINAL CONDITION OR BETTER.
7. FOR JACK AND BORE INSTALLATIONS:
   A. CONTRACTOR SHALL FIELD VERIFY LOCATION OF BORE PIT AND CONFIRM WITH ENGINEER BEFORE PROCEEDING WITH ENCASEMENT INSTALLATION.

ENCASED RAILROAD CROSSING - SEWER





NOTES:

1. TIMBER SKIDS SHALL BE LOCUS, CYPRESS, PRESERVATIVE TREATED HARDWOOD, OR OTHER MATERIAL APPROVED BY THE ENGINEER.
2. TIMBER PRESERVATIVES SHALL BE USED ACCORDING TO THEIR SUITABILITY FOR THE CONDITION OF EXPOSURE TO WHICH THEY WILL BE SUBJECTED AND SHALL NOT BE USED INTERCHANGEABLY. TREATMENTS SHALL CONFORM TO THE FOLLOWING LIMITATIONS:
   A. WATERBORNE PRESERVATIVES SHALL BE USED FOR TIMBER WHERE A CLEAN SURFACE IS DESIRABLE. THE MOISTURE CONTENT OF WOOD MATERIAL SHALL NOT BE MORE THAN 19 PERCENT AT THE TIME OF TREATMENT.
   B. PRESERVATIVES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M133 EXCEPT THAT COAL TAR CREOSOTE SOLUTION WILL NOT BE PERMITTED.
   C. PRESSURE TREATMENT SHALL CONFORM TO THE REQUIREMENTS OF AWPA C2.
3. METAL STRAPS AND CLIPS HOLDING BLOCKING TO CARRIER PIPE SHALL BE STAINLESS STEEL WITH A MINIMUM CROSS SECTION OF 0.014 SQ. IN. STRAP SPACING SHALL BE A MINIMUM OF TWO (2) BANDS PER SKID LENGTH.

TIMBER SKID

SOURCE: 1993 VDOT ROAD AND BRIDGE STANDARDS SEC. 1404.01

AS-BUILT

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	SCG
CHECKED	WPJ
APPROVED	WPJ
SCALE	NONE
DATE	APRIL '96
PROJECT	95045

REVISIONS

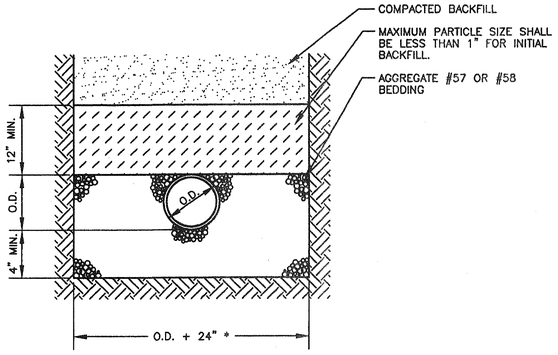
NO.	DATE	BY

GLEN WILTON AS-BUILT
SEWER SYSTEM IMPROVEMENTS
SEWER DETAILS

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024328
4-29-96
PROFESSIONAL ENGINEER

SHEET NO. 19 OF 25

FILE: SEWDET 4/29/96 ACADWIN13 RGW



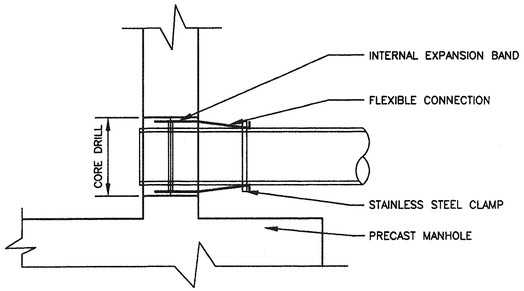
NOTES:

1. WHERE THE TRENCH BOTTOM IS IN ROCK, IT SHALL BE EXCAVATED TO A MINIMUM OF 8" BELOW THE BOTTOM OF THE PIPE AND BACKFILLED WITH BEDDING MATERIAL.
2. WHERE PIPE FOUNDATIONS ARE YIELDING, PIPE SHALL BE BEDDED ON A MINIMUM OF 8" BEDDING MATERIAL.

* FOR PIPE LESS THAN 12" THE TRENCH WIDTH MAY BE 36" MAXIMUM.

BEDDING DETAIL

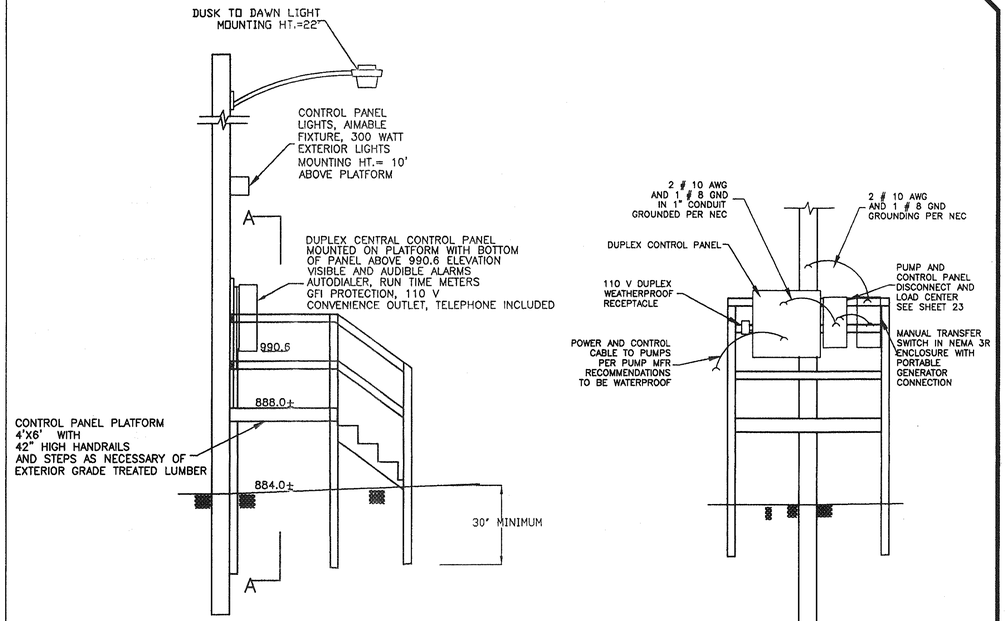
REF: 1993 VDOT ROAD AND BRIDGE STANDARDS DETAIL 1401.01



ALL PIPELINE CONNECTIONS TO PRECAST MANHOLES SHALL BE MADE WITH A FLEXIBLE BOOT. THE BOOT SHALL MEET ASTM SPECIFICATION C-923. BOOT SHALL BE MADE FROM NEOPRENE RUBBER AND HAVE A 3/8" MINIMUM WALL THICKNESS THROUGHOUT. THE INTERNAL EXPANSION BAND TO SECURE THE BOOT IN PLACE SHALL CONFORM TO ALUMINUM MATERIAL SPECIFICATION 6061-T6. THE EXTERNAL BAND TO CLAMP AND SEAL THE BOOT TO THE PIPE SHALL BE STAINLESS STEEL-CORROSION RESISTANT CONFORMING TO ASTM SPECIFICATION A-167. THE PORT TO RECEIVE THE BOOT SHALL BE CORE DRILLED AND SHALL ALLOW FOR LATERAL AND VERTICAL ANGULAR ADJUSTMENT THRU 20 DEGREES IN ALL DIRECTIONS. ALL FIELD INSTALLATION OF PIPE THRU FLEXIBLE CONNECTION SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS.

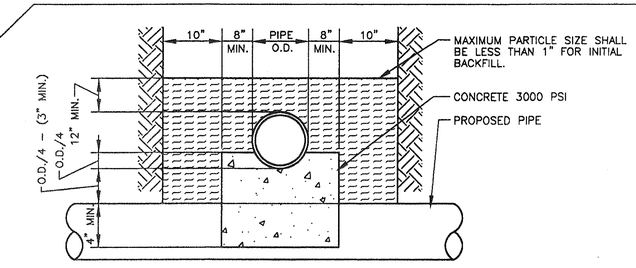
FLEXIBLE CONNECTION DETAIL

REF: 1993 VDOT ROAD AND BRIDGE STANDARDS DETAIL 1411.02

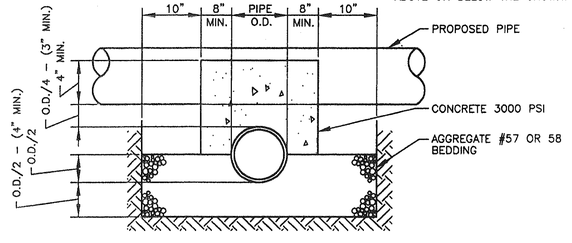


CONTROL PANEL PLATFORM

NOT TO SCALE



CONCRETE CRADLE



CONCRETE CAP

NOTES

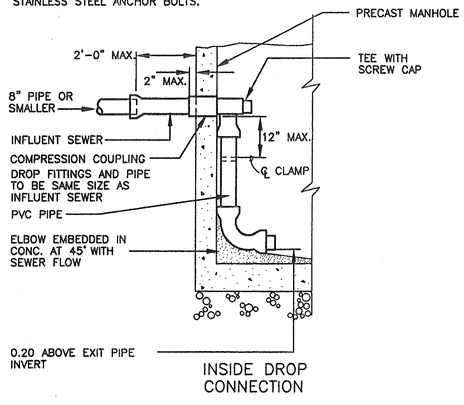
1. WHERE THE TRENCH BOTTOM IS IN ROCK, IT SHALL BE EXCAVATED TO A MINIMUM OF 8" BELOW THE BOTTOM OF THE PIPE AND BACKFILLED WITH BEDDING MATERIAL.
2. WHERE PIPE FOUNDATIONS ARE YIELDING, PIPE SHALL BE BEDDED ON A MINIMUM OF 8" BEDDING MATERIAL.

* FOR PIPE LESS THAN 12" THE TRENCH WIDTH MAY BE 36" MAXIMUM.

UTILITY PROTECTION DETAILS

REF: 1993 VDOT ROAD AND BRIDGE STANDARDS DETAIL 1401.01

PIPE TO BE PLACED AS CLOSE AS POSSIBLE TO M.H. WALL AND TO BE SECURED TO THE WALL WITH 1 1/2" X 12 GA. STAINLESS STEEL CLAMPS, 6' O.C. MAX. ANCHOR TO M.H. WALL WITH 2 1/2" STAINLESS STEEL ANCHOR BOLTS.

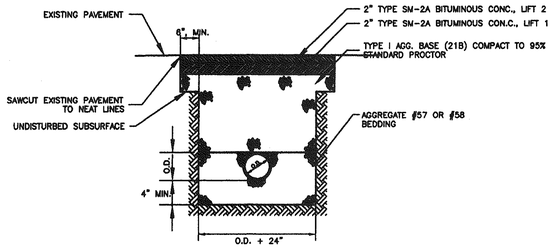


INSIDE DROP CONNECTION

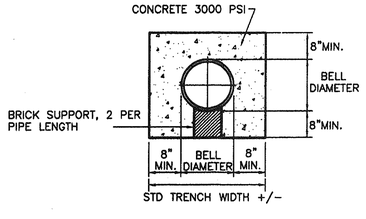
NOTES:

1. DROP CONSTRUCTION IS TO BE AT EVERY LOCATION WHERE THE INFLUENT INVERT IS GREATER THAN OR EQUAL TO 2'-0" ABOVE THE EFFLUENT SEWER INVERT.

DROP CONSTRUCTION AT STANDARD MANHOLE



PAVEMENT REMOVAL AND REPLACEMENT DETAIL



CONCRETE ENCASED PIPE

AS-BUILT

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	NDM
CHECKED	WPJ/LWW
APPROVED	WPJ
SCALE	NONE
DATE	JUNE '96
PROJECT	95045

REVISIONS		
NO.	DATE	BY

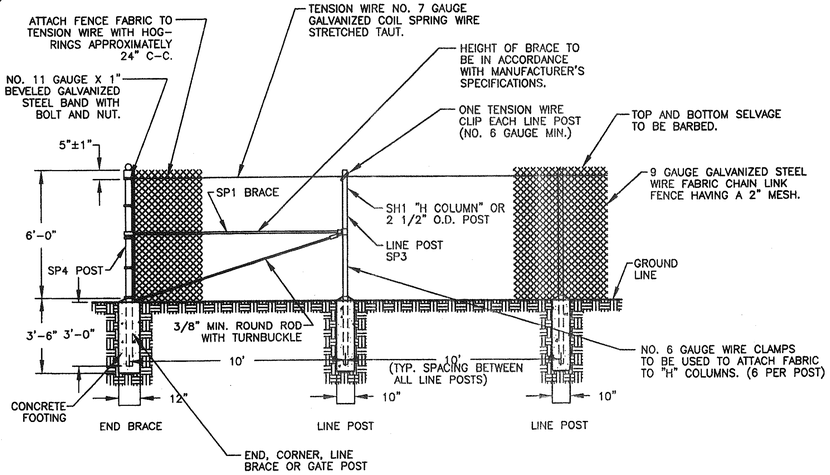
GLEN WILTON AS-BUILT
SEWER SYSTEM IMPROVEMENTS
SEWER DETAILS

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024328
6-11-96
PROFESSIONAL ENGINEER

SHEET NO. 20 OF 25

FILE: SEWDET2 6/11/96 ACADVER13 MDM

AS-BUILT

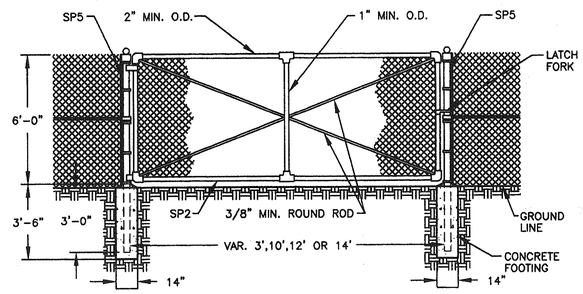


NOTES:

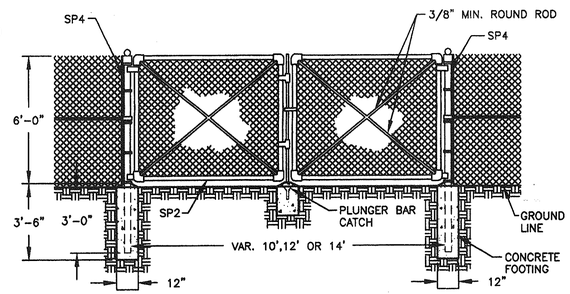
A MOISTURE-EXCLUDING CAP IS REQUIRED ON TUBULAR METAL LINE POSTS.

STANDARD FENCE - CHAIN LINK

REF: 1993 VDOT ROAD AND BRIDGE STANDARDS DETAIL 502.04



SINGLE SWING GATE



DOUBLE SWING GATE

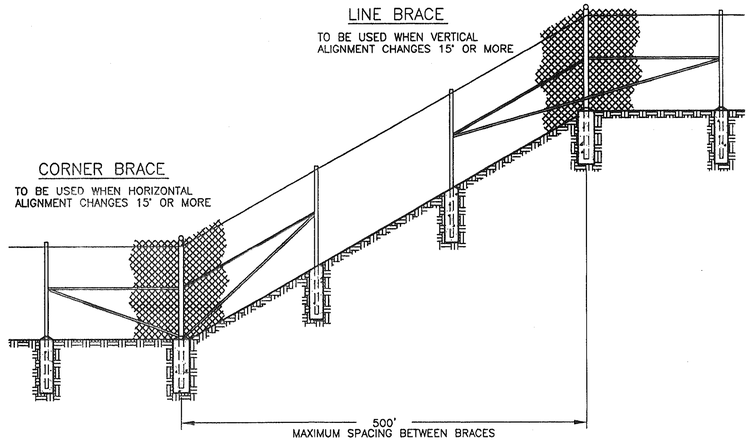
(TO BE USED WHERE SWINGING CLEARANCE IS LIMITED)

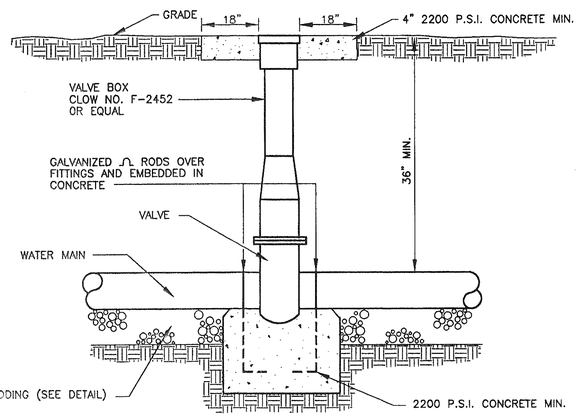
LINE BRACE

TO BE USED WHEN VERTICAL ALIGNMENT CHANGES 15' OR MORE

CORNER BRACE

TO BE USED WHEN HORIZONTAL ALIGNMENT CHANGES 15' OR MORE



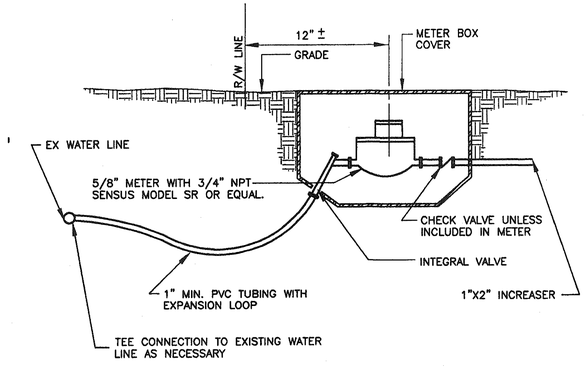


TYPICAL VALVE INSTALLATION

WATER PIPELINE CROSSING BELOW SEWER OR LATERAL

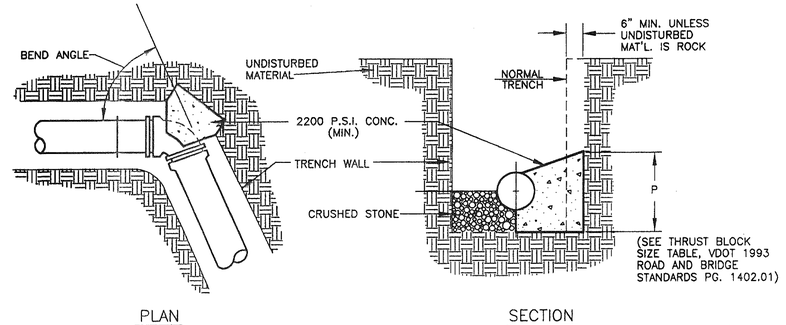
WATER PIPELINE CROSSING ABOVE SEWER OR LATERAL

WATER PIPELINE CROSSING SANITARY SEWER OR "HOUSE" LATERAL



NOTE:
METER BOX SHALL BE FORD YOKE BOX OR EQUAL.

TYPICAL 5/8", 3/4" & 1" CONNECTION



PLAN SECTION

NOTES:

1. THRUST BLOCKS ARE REQUIRED AT ALL BENDS OF MORE THAN 10°.
2. KEEP CONCRETE CLEAR OF JOINT AND JOINT ACCESSORIES.
3. BEARING SURFACE OF THRUST BLOCKS MUST BE NORMAL TO RESULTANT THRUST OF BEND AND BEAR ON SUITABLE UNDISTURBED MATERIAL.

HORIZONTAL THRUST BLOCK DETAIL

AS BUILT

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	NDM
CHECKED	WPJ
APPROVED	WPJ
SCALE	NONE
DATE	APRIL 1996
PROJECT	95045

REVISIONS

NO.	DATE	BY

AS-BUILT

GLEN WILTON SEWER SYSTEM IMPROVEMENTS
MISCELLANEOUS DETAILS

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024328
4-29-96
PROFESSIONAL ENGINEER

SHEET NO. 21 OF 25

FILE: MISCDET 4/29/96 ACADWIN13 RHW

AS-BUILT

GENERAL NOTES

ES-1 UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS VR 625-02-00 EROSION AND SEDIMENT CONTROL REGULATIONS.

ES-2 THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRECONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

ES-3 ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING

ES-4 A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

ES-5 PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-6 THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.

ES-7 ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-8 DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

ES-9 THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

TYPE A	TYPE B (SLOPES 3:1 OR STEEPER)
15 OCTOBER TO 1 FEBRUARY K-31 FESCUE @ 5 LB / 1000 SF BORZY WINTER RYE @ 1/2 LB / 1000 SF	15 MARCH TO 1 MAY CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF RED TOP @ 1/8 LB / 1000 SF
1 FEBRUARY TO 1 JUNE K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF	15 AUGUST TO 1 OCTOBER CROWN VETCH @ 1/2 LB / 1000 SF PERENNIAL RYEGRASS @ 1/2 LB / 1000 SF RED TOP @ 1/8 LB / 1000 SF
1 JUNE TO 1 SEPTEMBER K-31 FESCUE @ 5 LB / 1000 SF GERMAN MILLET @ 1/2 LB / 1000 SF	
1 SEPTEMBER TO 15 OCTOBER K-31 FESCUE @ 5 LB / 1000 SF ANNUAL RYE @ 1/2 LB / 1000 SF	

LIME: 140 LB / 1000 SF PULVERIZED AGRICULTURAL LIMESTONE

FERTILIZER: 5-20-10 @ 25 LB / 1000 SF
30-0-0 @ 7 LB / 1000 SF

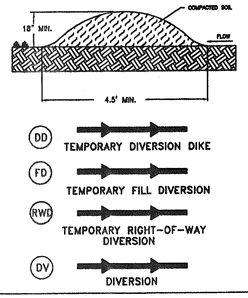
MULCH: IF REQUIRED, SHALL BE USED OVER ALL SEEDED AREAS AND SHALL BE APPLIED IN ACCORDANCE WITH SECTION 1.75 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.

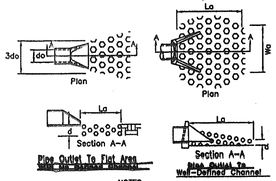
SOIL CONDITIONING: INCORPORATION OF LIME AND FERTILIZER, SELECTION OF CERTIFIED SEED, MULCHING, MAINTENANCE OF NEW SEEDLINGS, AND RESEEDING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS CONTAINED WITHIN THE VIRGINIA SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. ADDITIONAL SEEDING TO BE PERFORMED AS REQUIRED BY THE INSPECTOR.

SEED APPLICATION: APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER ON A FIRM, FRIABLE, SEEDBED. MAXIMUM SEEDING DEPTH SHALL BE 1/4 INCH.

TOTAL DISTURBED AREA = AC. = SQ. FT.

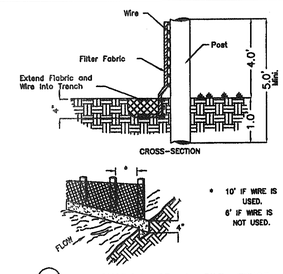
(PS) PERMANENT SEEDING MIXTURE



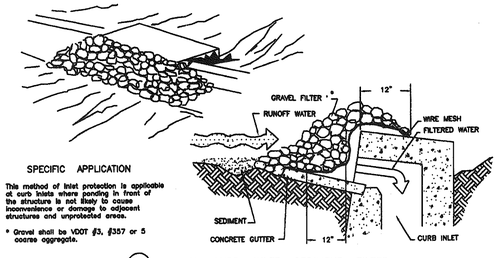


NOTES
1. Apron lining may be rip-rap, grouted rip-rap, or concrete.
2. La is the length of the rip-rap apron as calculated using plates 1.36d and 1.36o.
3. d = 1.5 times the maximum stone diameter, but not less than 6".

(OP) OUTLET PROTECTION



(SF) CONSTRUCTION OF A SILT FENCE

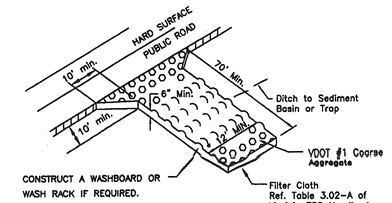


SPECIFIC APPLICATION

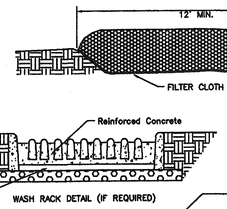
This method of inlet protection is applicable at curb inlets where ponding in front of the structure is not likely to cause inconvenience or damage to adjacent structures and unprotected areas.

* Gravel shall be VDOT #3, #357 or 5 coarse aggregate.

(IP) GRAVEL CURB INLET SEDIMENT FILTER



* MUST EXTEND FULL WIDTH OF INGRESS & EGRESS OPERATION.



WASH RACK DETAIL (IF REQUIRED)

(CE) TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

PROJECT DESCRIPTION

The purpose of this project is provide sanitary sewer service and wastewater treatment to the Glen Wilton community. The site is located within the Glen Wilton community along the James River in northern Botetourt County, Virginia. The site modifications will consist of the installation of approximately 4,500 lf of gravity sanitary sewer, 2,100 lf of sanitary sewer forcemain, instruction of a 20,000 gpd wastewater treatment plant, and associated appertenances.

EXISTING SITE CONDITIONS

The site has a rolling terrain that primarily drains toward the eastern boundary of the community (James River). Approximately 95% of the site is covered by native grasses and weeds while the other 5% is covered by brush and trees. The slopes throughout a majority of the site are between 1% and 50% .

ADJACENT PROPERTY

State Route 633 runs through the center of the community, parallel to the CSX Railroad. A majority of the sewer system improvements will occur within public utilities easements. Due to the nature of the project, there are numerous tracts of property that will border the construction. Please refer to the design plans in order to obtain the location and listing of the significant adjacent property owners.

CRITICAL EROSION AREAS

Critical erosion areas include steep slopes along the western portion of the site and locations where the project will cross an existing stream and drainageways. The drainage areas contributing to these critical erosion areas are relatively small. Silt fence will be installed around these areas to alleviate the potential for significant erosion. All disturbed ditches will be lined with protective matting (VDOT Standard EC-1 or EC-2) as required.

EROSION AND SEDIMENT CONTROL MEASURES

Unless otherwise indicated, all vegetative and structural erosion and sediment control practices shall be constructed and maintained according to minimum standards and specifications of the 1992 Virginia Erosion and Sediment Control Handbook. The minimum standards of the Virginia Erosion and Sediment Control Regulations shall be adhered to unless otherwise waived or approved by a variance.

STRUCTURAL PRACTICES

1. TEMPORARY CONSTRUCTION ENTRANCE - 3.02
A temporary construction entrance shall be installed where the access area intersects with the existing paved area. During muddy conditions, drivers of construction vehicles may be required to wash their wheels before entering Rt. 11.

2. STRAW BALE BARRIER - 3.04
Straw bale sediment barriers will be installed downslope of areas with minimal grades to filter sediment-laden runoff from sheet flow.

3. SILT FENCE BARRIER - 3.05
Silt fence barriers will be installed downslope of areas with minimal grade to filter sediment laden runoff from sheet flow.

4. CULVERT INLET PROTECTION - 3.08
All storm sewer culverts shall be protected during construction. Sediment-laden water shall be filtered before entering storm sewer inlets.

5. TEMPORARY DIVERSION DIKE - 3.09
Temporary diversion dikes will be installed downslope of drainage areas to divert storm runoff from a disturbed area to a sediment trapping facility such as a sediment trap.

6. TEMPORARY SEDIMENT TRAP - 3.13
A small ponding area is to be formed in order to detain sediment-laden runoff from small disturbed areas for enough time to allow most of the suspended solids to settle out.

7. OUTLET PROTECTION - 3.18
Riprap is to be placed at the outlet of all pipes.

8. RIPRAP - 3.19
Riprap is to be placed at the critical erosion areas to protect the soil from the erosive forces of concentrated runoff.

9. ROCK CHECK DAMS - 3.20
Rock check dams will be installed upstream of the sediment trap to reduce the velocity of concentrated flows.

VEGETATIVE PRACTICES

1. TOPSOILING - 3.30
Topsoil will be stripped from areas to be graded and stockpiled for later use. Stockpiled locations are to be stabilized with temporary vegetation and the perimeter of the stockpile is to have siltfence installed.

2. TEMPORARY SEEDING - 3.31
All denuded areas which will be left dormant for extended periods of time shall be seeded with fast germinating temporary vegetation immediately following grading.

3. PERMANENT SEEDING - 3.32
All final-graded areas where permanent cover is desired or rough-graded areas that will not be brought to final grade for a year or more shall be seeded with perennial vegetation.

4. MULCHING - 3.35
Mulch (straw or fiber) will be used on relatively flat areas and will be applied as the second step in the seeding operation.

5. SOIL STABILIZATION BLANKETS & MATTING - 3.36
A protective covering (blanket) or a soil stabilization mat will be installed on prepared planting areas of steep slopes, channels, or shorelines where noted.

6. TREES, SHRUBS, VINES AND GROUND COVERS - 3.37
All disturbed areas where turf is not preferred shall be covered with trees, shrubs, vines, and other ground coverings.

7. TREE PRESERVATION AND PROTECTION - 3.38
Tree preservation and protection practices will be observed where noted.

MANAGEMENT STRATEGIES

1. Construction will be sequenced so that grading operations can begin and end as quickly as possible.

2. Sediment trapping measures will be installed as a first step in grading and will be seeded and mulched immediately following installation.

3. Temporary seeding or other stabilization will follow immediately following grading.

4. Areas which are not to be disturbed will be clearly marked by flags, signs, etc.

5. The job superintendent shall be responsible for the installation and maintenance of all erosion and sediment control practices.

6. After achieving adequate stabilization, the temporary E&S controls will be cleaned out or converted to permanent stormwater management control structures.

PERMANENT STABILIZATION

All areas disturbed by construction shall be stabilized with permanent seeding immediately following finish grading. Seeding shall be done with Kentucky 31 Tall Fescue according to Std. and Spec. 3.32, PERMANENT SEEDING, of the handbook. . Mulch (straw or fiber) will be used on all seeded areas. In all seeding operations, seed, fertilizer and lime will be applied prior to mulching. Erosion control blankets may be installed over fill slopes which have been brought to final grade and have been seeded to protect the slopes properly.

STORMWATER MANAGEMENT

Stormwater management will not be necessary on this project due to the nominal increase in stormwater generation that will result from the proposed improvements.

MAINTENANCE

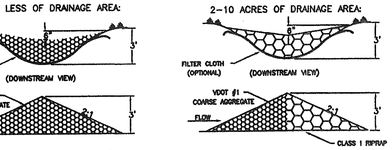
In general, all erosion and sediment control measures will be checked daily and after each significant rainfall. The following items will be checked in particular:

1. The sediment traps will be checked regularly for sediment cleanout.

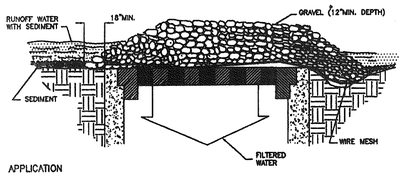
2. The gravel outlets will be checked regularly for sediment buildup which will prevent drainage. If the gravel is clogged by sediment, it shall be removed and cleaned, or replaced.

3. The silt fence barriers will be checked regularly for undermining or deterioration of the fabric. Sediment shall be removed when the level of sediment deposition reaches half way to the top of the barrier.

4. The seeded areas will be checked regularly to ensure that a good stand is maintained. Areas should be fertilized and reseeded as needed.



(CD) ROCK CHECK DAM

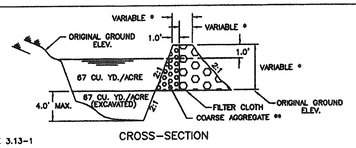


SPECIFIC APPLICATION

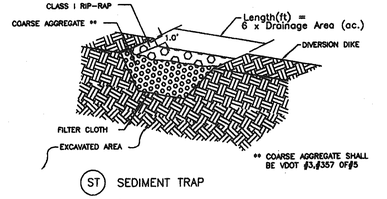
This method of inlet protection is applicable where heavy concentrated flows are expected, but not where ponding around the structure might cause excessive inconvenience or damage to adjacent structures and unprotected areas.

* Gravel shall be VDOT #3, #357 or #5 coarse aggregate.

(IP) GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER



CROSS-SECTION

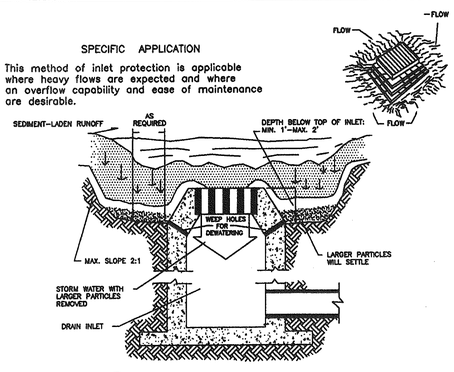


(ST) SEDIMENT TRAP

NOTES
For areas less than 3.0 acres. For areas larger than 3.0 acres, A SEDIMENT TRAP, is required Please see Va' ESC manual for design.

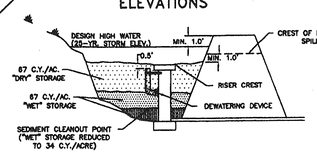
SPECIFIC APPLICATION

This method of inlet protection is applicable where heavy flows are expected and where an overflow capability and ease of maintenance are desirable.

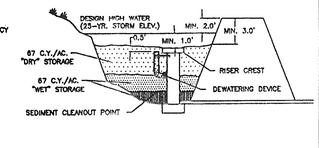


(IP) EXCAVATED DROP INLET SEDIMENT TRAP

SEDIMENT BASIN SCHEMATIC ELEVATIONS



DESIGN ELEVATIONS WITH EMERGENCY SPILLWAY



DESIGN ELEVATIONS WITHOUT EMERGENCY SPILLWAY (RISER PASSES 25-YR. EVENT)

NO.	TITLE	KEY	SYMBOL	NO.	TITLE	KEY	SYMBOL
3.01	SAFETY FENCE	SAF		3.20	ROCK CHECK DAMS	CD	
3.02	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE	CE		3.21	LEVEL SPREADER	LS	
3.03	CONSTRUCTION ROAD STABILIZATION	CRS		3.22	VEGETATIVE STREAMBANK STABILIZATION	VSS	
3.04	STRAW BALE BARRIER	STB		3.23	STRUCTURAL STREAMBANK STABILIZATION	SSS	
3.05	SILT FENCE	SF		3.24	TEMPORARY VEHICULAR STREAM CROSSING	VSC	
3.06	BRUSH BARRIER	BB		3.25	UTILITY STREAM CROSSING	USC	
3.07	STORM DRAIN INLET PROTECTION	IP		3.26	DEWATERING STRUCTURE	DS	
3.08	CULVERT INLET PROTECTION	CIP		3.27	TURBIDITY CURTAIN	TC	
3.09	TEMPORARY DIVERSION DIKE	DD		3.28	SUBSURFACE DRAIN	SD	
3.10	TEMPORARY FILL DIVERSION	FD		3.29	SURFACE ROUGHENING	SR	
3.11	TEMPORARY RIGHT-OF-WAY DIVERSION	RWD		3.30	TOPSOILING	TO	
3.12	DIVERSION	DV		3.31	TEMPORARY SEEDING	TS	
3.13	TEMPORARY SEDIMENT TRAP	ST		3.32	PERMANENT SEEDING	PS	
3.14	TEMPORARY SEDIMENT BASIN	SB		3.33	SODDING	SO	
3.15	TEMPORARY SLOPE DRAIN	TSD		3.34	BERMUDA GRASS AND ZOYSIAURASS ESTABLISHMENT	B/M OR Z	
3.16	PAVED FLUME	PF		3.35	MULCHING	MU	
3.17	STORMWATER CONVEYANCE CHANNEL	SCC		3.36	SOIL STABILIZATION BLANKETS AND MATTING	BE/ZE	
3.18	OUTLET PROTECTION	OP		3.37	TREES, SHRUBS, VINES AND GROUND COVERS	VEG	
3.19	RIPRAP	RR		3.38	TREE PRESERVATION AND PROTECTION	TP	
				3.39	DUST CONTROL	DC	

AS-BUILT

AS-BUILT

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	NDM/SCG/RHW
CHECKED	WPJ
APPROVED	WPJ
SCALE	NONE
DATE	APRIL 1996
PROJECT	95045

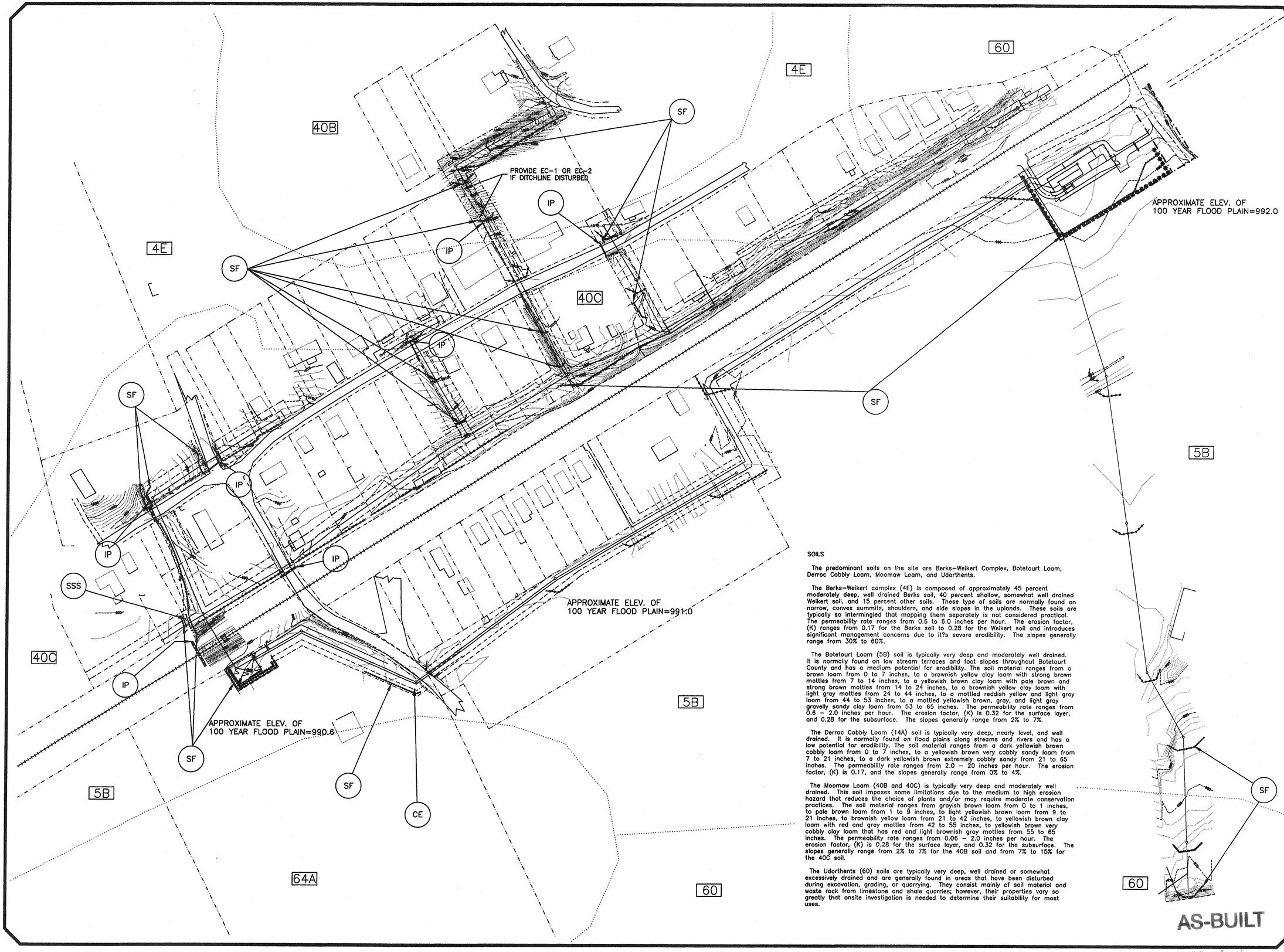
REVISIONS		
NO.	DATE	BY

GLEN WILTON AS-BUILT
SEWER SYSTEM IMPROVEMENTS
EROSION CONTROL DETAILS

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 020328
4-29-96
PROFESSIONAL ENGINEER

SHEET NO. 22 OF 25

FILE: ESCDET 4/29/96 ACADWAR13 RHW



SOILS

The predominant soils on the site are Berks–Weikert Complex, Botetourt Loam, Derroc Cobbly Loam, Moomaw Loam, and Udorthents.

The Berks–Weikert complex (4E) is composed of approximately 45 percent moderately deep, well drained Berks soil, 40 percent shallow, somewhat well drained Weikert soil, and 15 percent other soils. These type of soils are normally found on narrow, convex summits, shoulders, and side slopes in the uplands. These soils are typically so intermingled that mapping them separately is not considered practical. The permeability rate ranges from 0.6 to 6.0 inches per hour. The erosion factor, (K) ranges from 0.17 for the Berks soil to 0.28 for the Weikert soil and introduces significant management concerns due to it?s severe erodibility. The slopes generally range from 30% to 60%.

The Botetourt Loam (5B) soil is typically very deep and moderately well drained. It is normally found on low stream terraces and foot slopes throughout Botetourt County and has a medium potential for erodibility. The soil material ranges from a brown loam from 0 to 7 inches, to a brownish yellow clay loam with strong brown mottles from 7 to 14 inches, to a yellowish brown clay loam with pale brown and strong brown mottles from 14 to 24 inches, to a brownish yellow clay loam with light gray mottles from 24 to 44 inches, to a mottled reddish yellow and light gray loam from 44 to 53 inches, to a mottled yellowish brown, gray, and light gray gravelly sandy clay loam from 53 to 65 inches. The permeability rate ranges from 0.6 – 2.0 inches per hour. The erosion factor, (K) is 0.32 for the surface layer, and 0.28 for the subsurface. The slopes generally range from 2% to 7%.

The Derroc Cobbly Loam (14A) soil is typically very deep, nearly level, and well drained. It is normally found on flood plains along streams and rivers and has a low potential for erodibility. The soil material ranges from a dark yellowish brown cobbly loam from 0 to 7 inches, to a yellowish brown very cobbly sandy loam from 7 to 21 inches, to a dark yellowish brown extremely cobbly sandy from 21 to 65 inches. The permeability rate ranges from 2.0 – 20 inches per hour. The erosion factor, (K) is 0.17, and the slopes generally range from 0% to 4%.

The Moomaw Loam (40B and 40C) is typically very deep and moderately well drained. This soil imposes some limitations due to the medium to high erosion hazard that reduces the choice of plants and/or may require moderate conservation practices. The soil material ranges from grayish brown loam from 0 to 1 inches, to pale brown loam from 1 to 9 inches, to light yellowish brown loam from 9 to 21 inches, to brownish yellow loam from 21 to 42 inches, to yellowish brown clay loam with red and gray mottles from 42 to 55 inches, to yellowish brown very cobbly clay loam that has red and light brownish gray mottles from 55 to 65 inches. The permeability rate ranges from 0.06 – 2.0 inches per hour. The erosion factor, (K) is 0.28 for the surface layer, and 0.32 for the subsurface. The slopes generally range from 2% to 7% for the 40B soil and from 7% to 15% for the 40C soil.

The Udorthents (60) soils are typically very deep, well drained or somewhat excessively drained and are generally found in areas that have been disturbed during excavation, grading, or quarrying. They consist mainly of soil material and waste rock from limestone and shale quarries; however, their properties vary so greatly that onsite investigation is needed to determine their suitability for most uses.

AS-BUILT

AS-30

FILE: ESCPLAN 4/30/96 ACADVER13 R/W

ENGINEERING CONCEPTS INC.

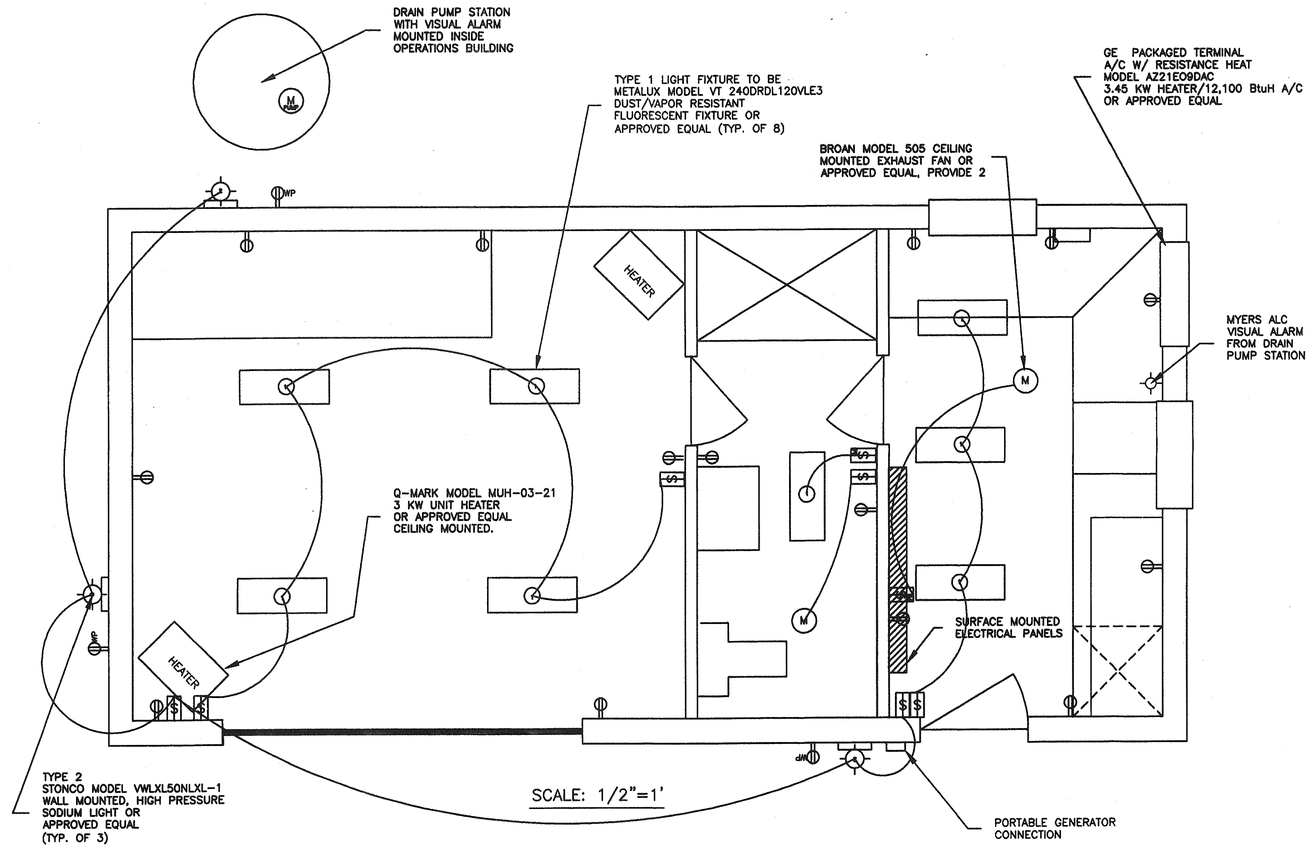
DESIGNED	NDM
DRAWN	NDM/RHW
CHECKED	WPJ
APPROVED	WPJ
SCALE	1"=80'
DATE	APRIL '96
PROJECT	95045

REVISIONS		
NO.	DATE	BY

GLEN WILTON As-Built
SEWER SYSTEM IMPROVEMENTS
EROSION CONTROL PLAN

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024328
4-30-96
PROFESSIONAL ENGINEER

SHEET NO. 23 OF 25



RATED FOR SERVICE ENTRANCE EQUIPMENT

LOAD CENTER

150 AMPS MN BRK 120/240 VOLT, 1 PH., 20 SPACES, NEMA 3,SURF. MTD.,3 WIRE

CIRC. NO.	DESCRIPTION OF LOAD	SPACE #	POLES	WIRE SZ.	PHASE AMPS A	PHASE AMPS C	WIRE SZ.	POLES	SPACE #	DESCRIPTION OF LOAD	CIRC. NO.
1	PUMP NUMBER 1	1	100/2	12	15.0		12	100/2	2	PUMP NUMBER 2	2
		3		12	15.0		12		4		
						15.0					
3	CONV. OUTLET **	5	20/1	12	3.0		12	20/1	6	YARD LIGHTS	4
						1.5					
5	SPARE	7		12			12	20/1	8	PANEL LIGHTS	6
						1.5					
7	SPACE	9		12			12		10	SPACE	8
9	SPACE	11		12			12		12	SPACE	10
11	SPACE	13		12			12		14	SPACE	12
13	SPACE	15		12			12		16	SPACE	14
15	SPACE	17		12			12		18	SPACE	16
17	SPACE	19		12			12		20	SPACE	18
TOTAL LOAD					33.0	33.0					

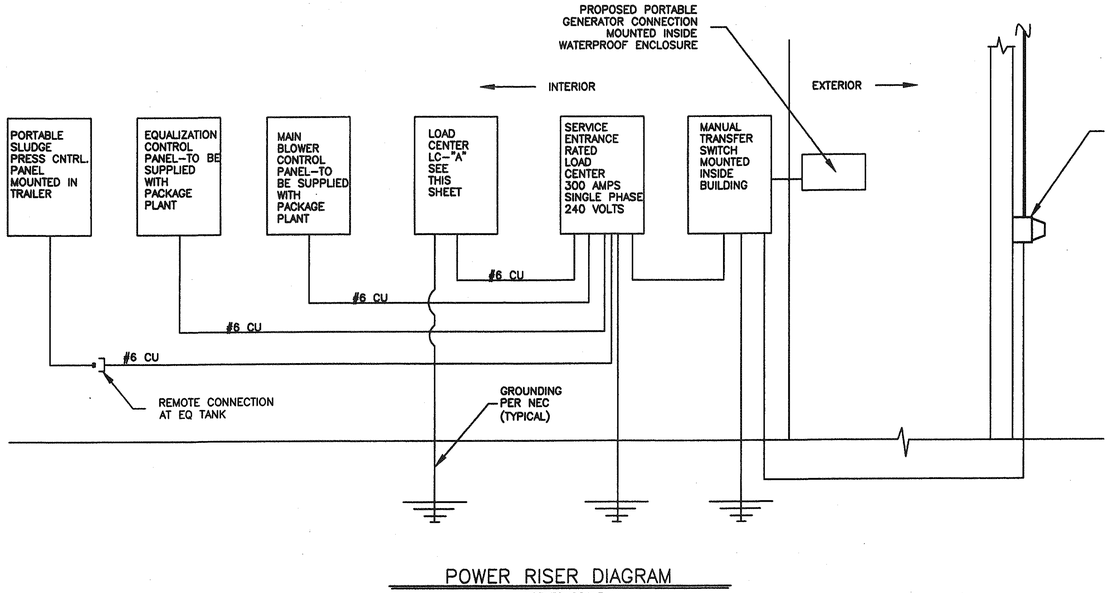
** INDICATES TO PROVIDE GROUND FAULT INTERRUPT CIRCUIT BREAKER

* SEE NOTES THIS SHEET

PUMP STATION ELECTRICAL

ELECTRICAL LEGEND

- LIGHT SWITCH
- FAN SWITCH
- DUPLEX RECEPTACLE
- WP DUPLEX RECEPTACLE – WEATHER PROOF
- PANELBOARD, LOADCENTER, ETC.



*NOTES:
1. ALL WIRE SIZES SHOWN ARE FOR COPPER.
2. ALL WIRE SHALL BE IN CONDUIT.
3. VERIFY WIRE SIZING WITH EQUIPMENT SUPPLIERS.
4. MOUNT RECEPTACLES 36" A.F.F., 12" ABOVE COUNTER, 36" ABOVE EXTERIOR FINISHED GRADE.
5. CONTRACTOR SHALL PROVIDE DEDICATED PHONE LINE FOR AUTODIALER AT WWTP AND PUMP STATION SITE.
6. CONTRACTOR SHALL VERIFY ALL WIRE AND CONDUIT SIZING.
7. ALL ELECTRICAL RECEPTACLES ABOVE COUNTERTOP SHALL BE GFI PROTECTED.

POWER RISER DIAGRAM

NOT TO SCALE

LOAD CENTER (LC-"A")

100 AMPS MN BRK. 120/240 VOLT, 1 PH., 30 SPACES, NEMA 1,SURF. MTD.,3 WIRE

CIRC. NO.	DESCRIPTION OF LOAD	SPACE #	POLES	WIRE SZ.	PHASE AMPS A	PHASE AMPS C	WIRE SZ.	POLES	SPACE #	DESCRIPTION OF LOAD	CIRC. NO.
1	3 KW UNIT HEATER	1	15/2	12	12.5		12	15/2	2	3 KW UNIT HEATER	2
		3		12	12.5		12		4		
						12.5					
3	OUTSIDE RECEP.**	5	20/1	12	12.5		12	20/1	6	INSIDE RECEP.**	4
						12.5					
5	INSIDE RECEP. **	7	20/1	12	12.5		12	20/1	8	PLANT RECEPT.**	6
						12.5					
7	INSIDE LIGHTS	9	20/1	12	1.5		12	20/1	10	INSIDE LIGHTS	8
						1.5					
9	YARD LIGHTS	11	20/1	12	3.0		12	20/1	12	YARD LIGHTS	10
						3.0					
11	PLANT LIGHTS	13	20/1	12	3.0		12	20/1	14	PLANT LIGHTS	12
						3.0					
13	EXHAUST FAN	15	20/1	12	1.5		12	20/1	16	EXHAUST FAN	14
						1.5					
15	WATER HEATER	17		12	6.5		12		18	A/C & HEATER	16
						7.5					
		19		12		6.5	12		20		
						7.5					
	SPARE			12	1.5		12			SPARE	
						1.5					
	SPACE	29		12			12		30	SPACE	
TOTAL LOAD					74.5	74.5					

** INDICATES TO PROVIDE GROUND FAULT INTERRUPT CIRCUIT BREAKER

WASTEWATER TREATMENT PLANT SITE ELECTRICAL

AS-BUILT

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	NDM/RHW
CHECKED	WPJ
APPROVED	WPJ
SCALE	NONE
DATE	APRIL '96
PROJECT	95045

REVISIONS

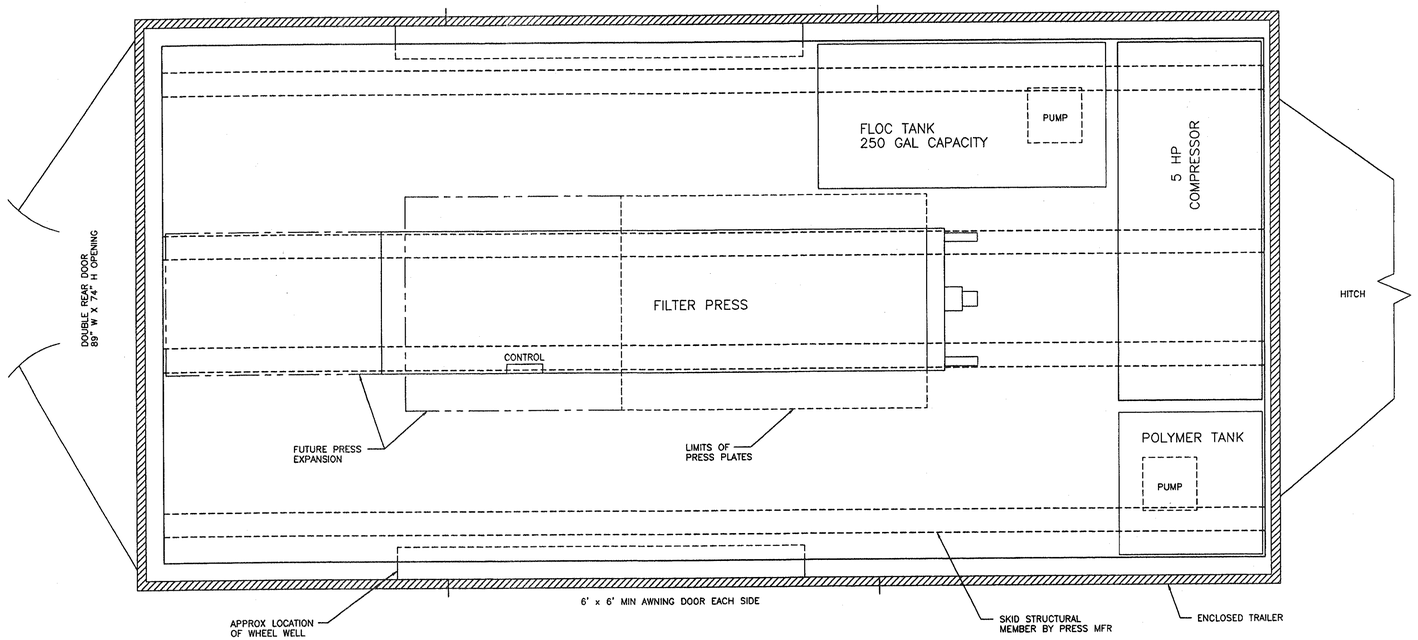
NO.	DATE	BY

GLEN WILTON (As-Built)
SEWER SYSTEM IMPROVEMENTS
ELECTRICAL PLAN

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, II
No. 024328
4-30-96
PROFESSIONAL ENGINEER

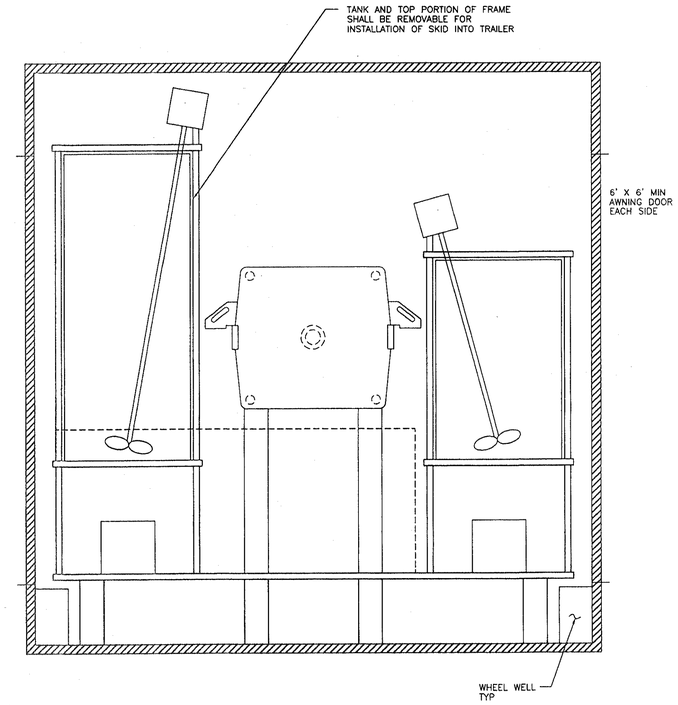
SHEET NO. 24 OF 25

FILE: ELECPLN 4/30/96 ACADVER13 RHW



PLAN VIEW

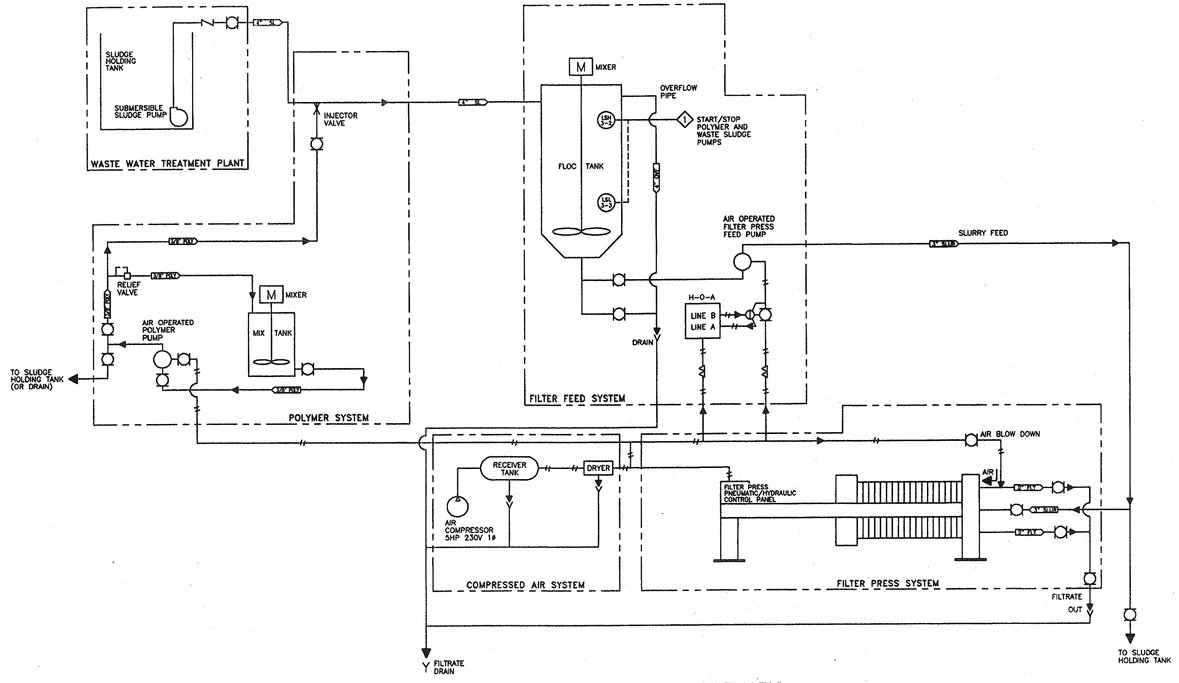
SCALE: 1" = 1'



END VIEW

SCALE: 1" = 1'

VIEW LOOKING FROM REAR DOOR OPENING



SYSTEM SCHEMATIC

NOT TO SCALE

OUTLINE SPECIFICATIONS:

The schematic and drawings shown represent a complete skid mounted Plate and Frame sludge dewatering system installed in an enclosed trailer consisting of sludge conditioning and dewatering equipment and associated piping and valves. The intended operation is as follows:

1. Sludge is withdrawn from existing digester/sludge holding tanks with a submersible pump. The submersible pump is powered by a receptacle in the trailer.
2. Polymer is added to the floc tank in proportion to the amount of sludge added. The rate of polymer addition by the supplied polymer feed pump shall be fully adjustable over the required operating range. A polymer mix/feed tank shall be provided.
3. The filter press feed pump draws flocculated sludge from the floc tank and pumps to the press. The press allows the filtrate to flow out through the provided filtrate drain channels and into the filtrate drain piping.
4. The dried sludge cake falls from the press into a hopper for manual withdrawal with a shovel after each cycle.

The press manufacturer shall be responsible for the complete skid mounted package, including associated pumps, tanks, piping, valves, and controls. The press shall be equipped with a fully automatic closure mechanism as required. The press shall be equipped with sufficient piping, quick disconnects, and valves to allow separate filtrate, sludge, and polymer wasting. The skid shall be mounted in an enclosed trailer with aluminum exterior and interior walls, steel framing, checkered aluminum plate flooring and sealed lighting equivalent to four 500 Watt Quartz lamps. The trailer shall be equipped with four corner jacks for anchoring the trailer during dewatering operations. The trailer shall be provided with a roof vent, double doors on the rear and awning doors on both sides. The trailer shall be rated to carry the complete package plus 1000 lbs. Minimum dimensions shall be:

* INSIDE HEIGHT: 96"
* INSIDE LENGTH: 188"
* FLOOR WIDTH: 93"
* REAR DOOR: 89"W X 74"H
* SIDE DOORS: (2) AWNING TYPE, MINIMUM 6'W X 6'H

The design is based on a JWI 630 mm J-Press with initial 4 cubic feet capacity, expandable to 8 cubic feet. The trailer design is based on a 1996 CarMate Custom Cargo Trailer, 8'x16' heavy duty trailer.

AS-BUILT

ENGINEERING CONCEPTS INC.

DESIGNED	NDM
DRAWN	JHG
CHECKED	WPJ
APPROVED	WPJ
SCALE	1"=1'
DATE	JUNE '96
PROJECT	95045

REVISIONS

NO.	DATE	BY

AS-BUILT

GLEN WILTON AS-BUILT
SEWER SYSTEM IMPROVEMENTS
PORTABLE SLUDGE PRESS

COMMONWEALTH OF VIRGINIA
WILLIAM P. JOHNSON, III
No. 025828
6-11-96
PROFESSIONAL ENGINEER

SHEET NO. 25 OF 25

FILE: TRLR-LO 6/11/96 ACADWNR13 NDM