

DESIGN CRITERIA

I. SLUDGE PROCESSING

SLUDGE DEWATERING CAPACITY = 8,500 LB/HR
WORK SCHEDULE = 12 HRS/DAY OPERATION - 5 DAYS/WEEK.
DAILY SLUDGE CAKE PRODUCTION = 51 TONS/DAY

II LAGOON SLUDGE PUMPING

AVG. LAGOON SOLIDS CONCENTRATION = 12 %
DILUTE SOLIDS AS REQUIRED FOR PUMPING
MIN PUMPING RATE = 142 GPM @ 12 % SOLIDS
MAX PUMPING RATE = 284 GPM @ 6 % SOLIDS
TWO SUBMERSIBLE SLUDGE PUMPS EACH RATED 325 GPM 47' TDH
COMBINED PUMPING CAPACITY = 400 GPM @ 60' TDH

III SLUDGE SURGE BASIN

VOLUME = 6,200 GALLONS

IV POLYMER

POLYMER REQ'D = 5.0 LB/TON
DAILY POLYMER USE = 256 LB/DAY
POLYMER SOLUTION CONCENTRATION = 0.5 %
THREE PROGRESSIVE CAVITY POLYMER METERING PUMPS
POLYMER FEED RATE TO EACH BELT PRESS = 170 GPH
POLYMER AGING TANK VOLUME =1,000 GALLONS TOTAL
POLYMER SUPPLY TANK VOLUME =1,000 GALLONS TOTAL

V PROGRESSIVE CAVITY SLUDGE PUMPS

THREE PUMPS EACH RATED 185 GPM AT 30' TDH AT 520 RPM MAX SPEED
VARIABLE SPEED DRIVE

VI BELT PRESSES

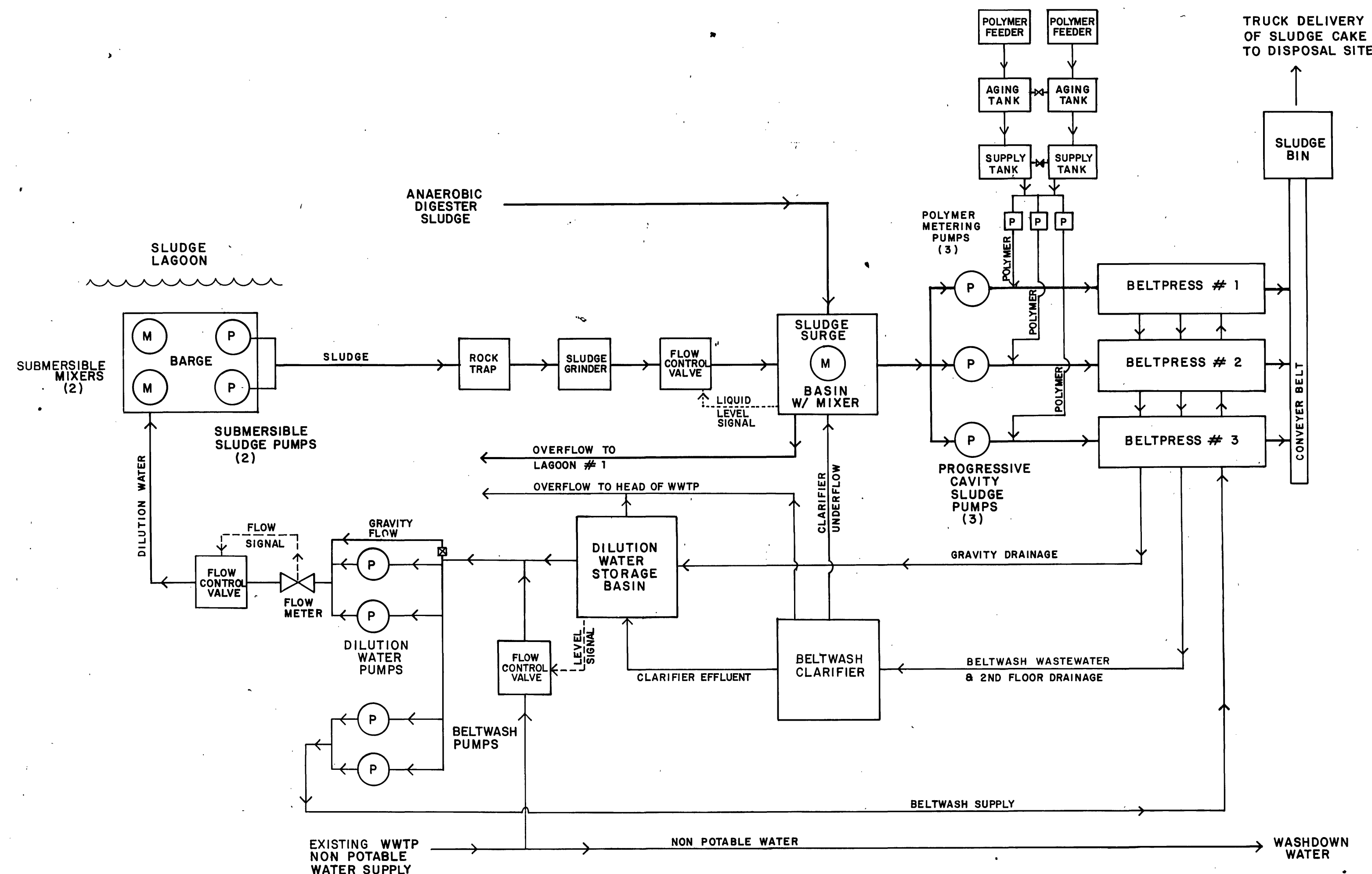
3 - 2.20 METER BELT PRESSES
DEWATERING CAPACITY = 1,288 LB/HR/METER
MIN SLUDGE CAKE CONCENTRATION = 24 % SOLIDS
MIN SOLIDS CAPTURE = 90 %
SLUDGE CAKE PRODUCTION = 21.0 CU. YD/HR. @ 24 % SOLIDS
BELT WASH WATER REQ'D = 120 GPM @ 85 PSI EACH PRESS.

VII BELTWASH WASTEWATER CLARIFIER AND RECYCLE PUMPS

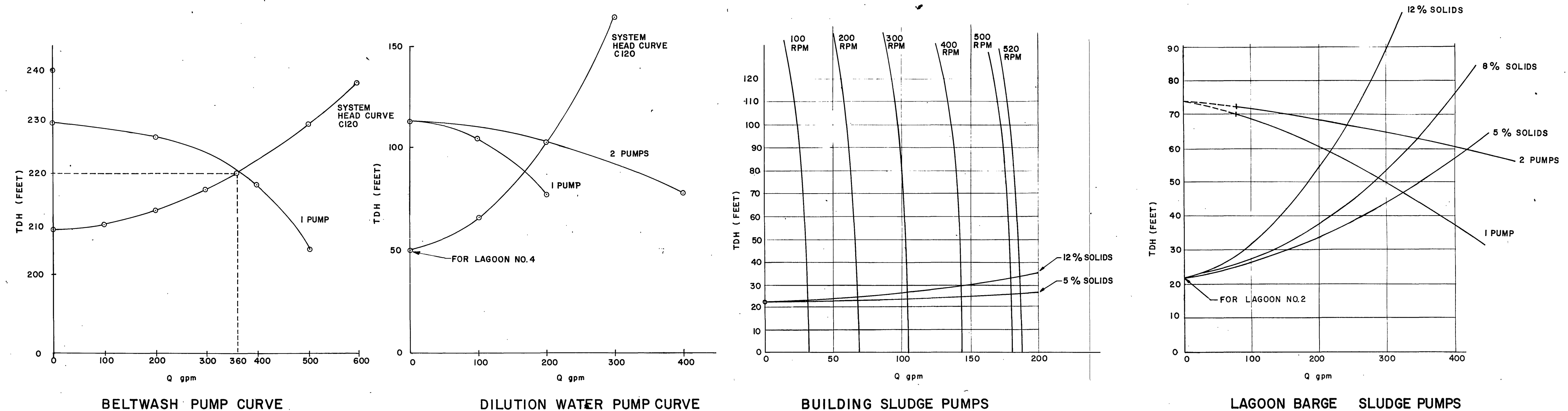
DESIGN FLOW = 360 GPM
VOLUME = 13,900 GALLONS
RETENTION TIME = 38.6 MIN.
TUBE SETTLER AREA = 114 FT.²
TUBE OVERFLOW RATE = 3.16 GPM / FT.²
WEIR LENGTH = 37'
WEIR LOADING RATE = 14,000 GPD / FT
SOLIDS LOADING = 850 LB / HR @ 90 % BP SOLIDS CAPTURE
SLUDGE UNDERFLOW = 50 GPM @ 3% SOLIDS AND 90% CLARIFIER SOLIDS CAPTURE
MAX EFFLUENT SUSPENDED SOLIDS = 200 MG / L.
TWO BELT WASH RECYCLE PUMPS EACH RATED 360 GPM @ 95 PSI

VIII DILUTION WATER STORAGE BASIN AND PUMPS

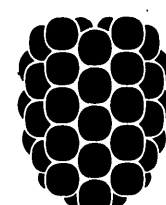
VOLUME = 4,600 GALLONS
BASIN DRAINS BY GRAVITY TO LAGOONS 1,2,3,5
PUMP TO LAGOON 4
TWO PUMPS EACH RATED 163 GPM @ 37 PSI



FLOW SCHEMATIC



PUMP CURVES



Dewberry & Davis

ENGINEERS ARCHITECTS PLANNERS SURVEYORS

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PREPARED FOR
CITY OF ROANOKE
ROANOKE, VIRGINIA

CITY OF ROANOKE WASTEWATER TREATMENT PLANT
SLUDGE DEWATERING FACILITIES

DESIGN CRITERIA, FLOW SCHEMATIC, PUMP CURVES

SCALE:
AS SHOWN

DATE:
AUG 1981

DESIGNED BY:

JBC

DRAFTED BY:

SHEET

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OF
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FILE NUMBER	100-368611
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