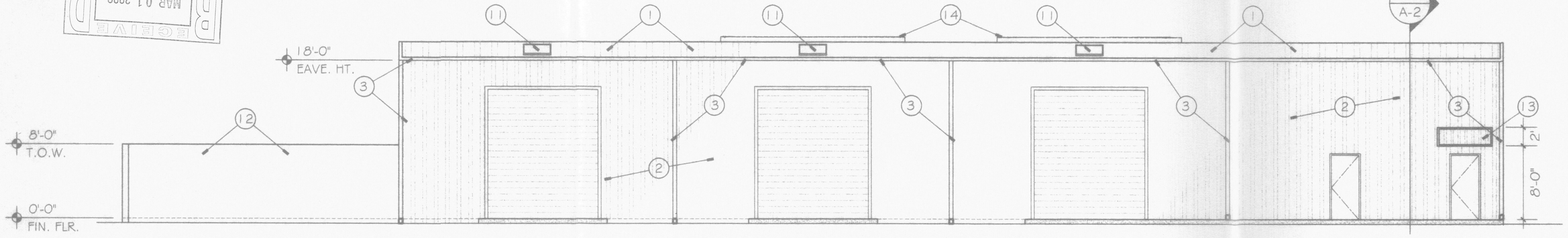
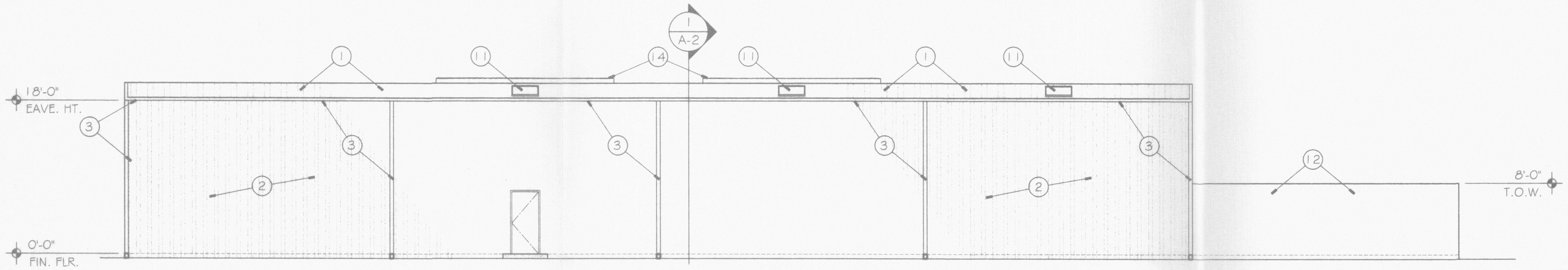


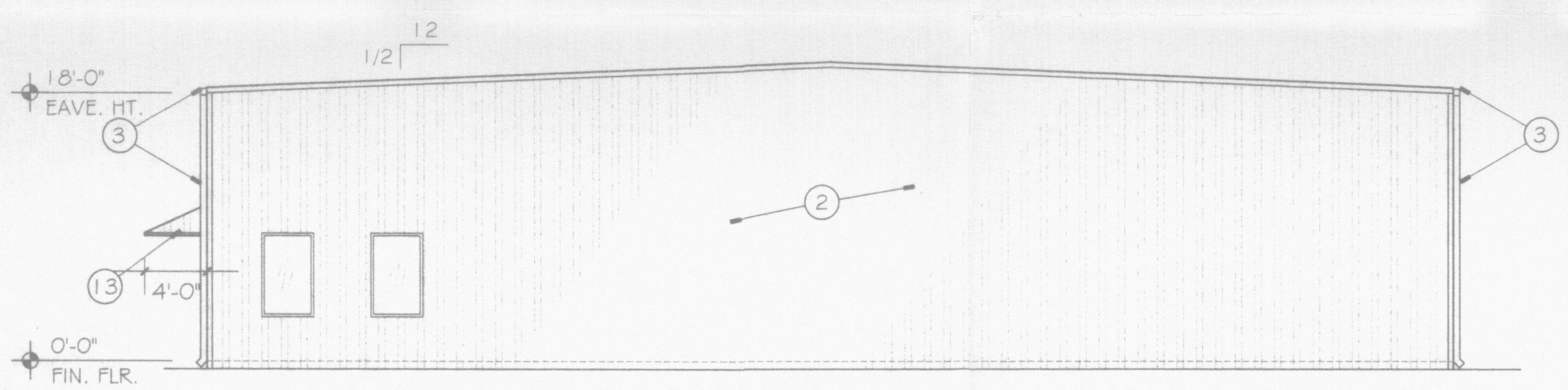
SOUTH ELEVATION

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



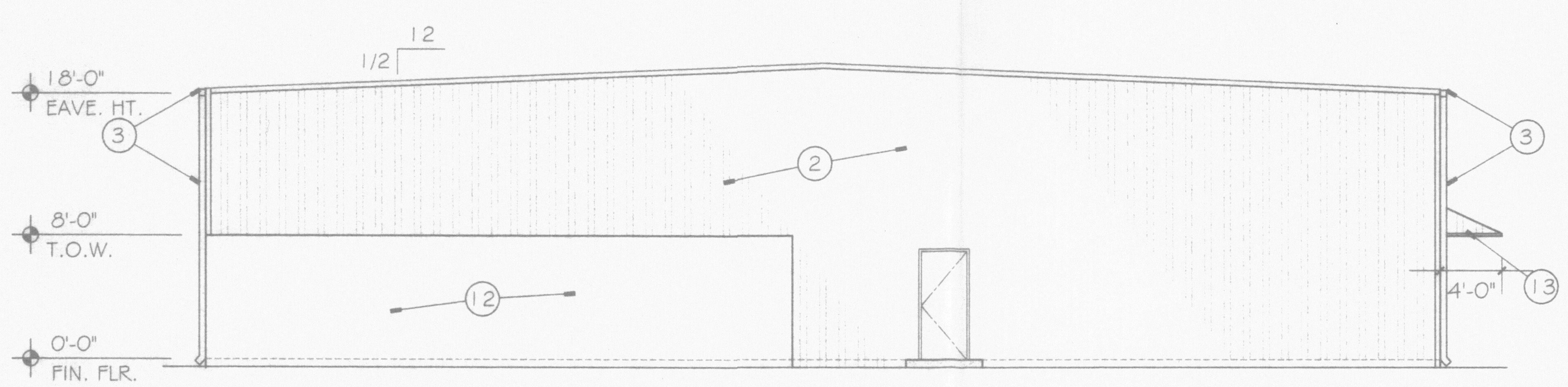
NORTH ELEVATION

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



EAST ELEVATION

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

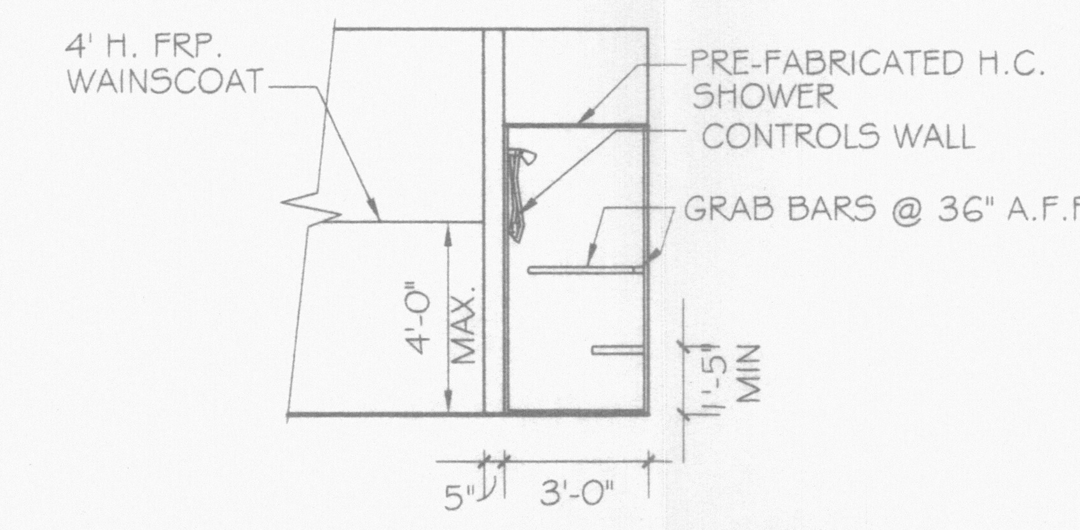


WEST ELEVATION

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

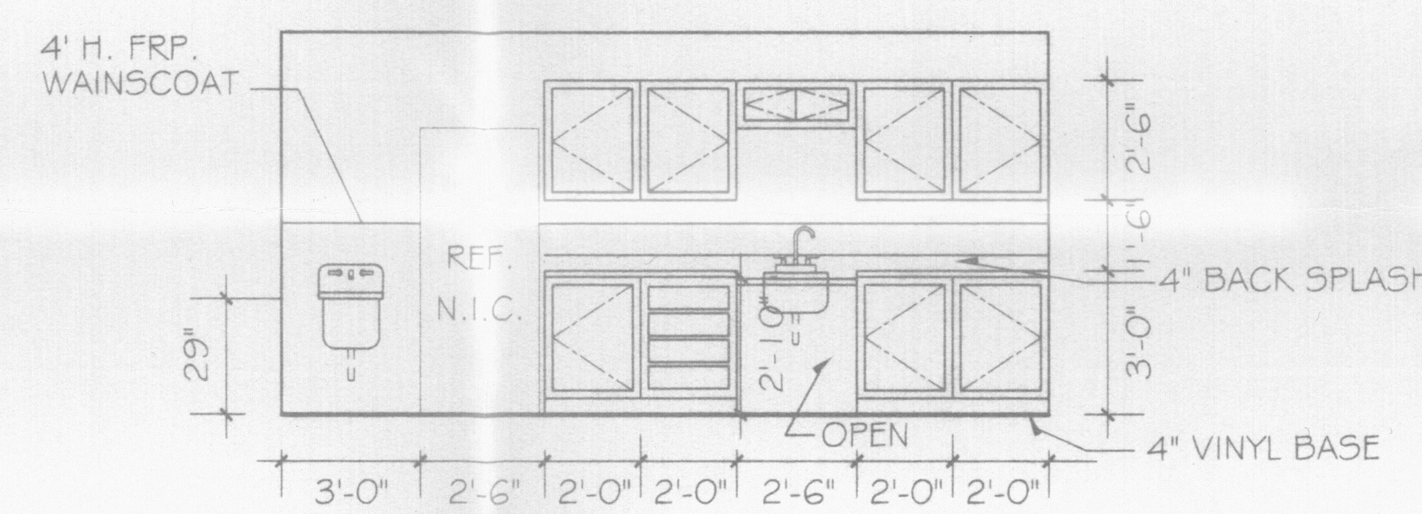
KEYED NOTES

1. PRE-ENGINEERED MTL. BLDG. ROOF PANELS.
2. PRE-ENGINEERED MTL. BLDG. WALL PANELS.
3. PRE-FINISHED MTL. GUTTER & DOWNSPOUT W/ PRE-FAB CONC. SPLASHBLOCKS.
4. COMPACTED ENGINEERED FILL.
5. CLOSURE STRIP.
6. 4" CONC. SLAB ON GRADE.
7. PRE-ENGINEERED MTL. BLDG. STRUCTURE.
8. R-30 BATT ISULATION.
9. R-19 BATT INSULATION.
10. 1" RIGID PERIMETER INSULATION.
11. 3'-0"X6'-0" SKYLIGHT TYP.
12. 8" C.M.U. WALL, 8'-0" HIGH.
13. "R" PANEL MTL. CANOPY
14. RIDGE VENT @ 2 BAYS.



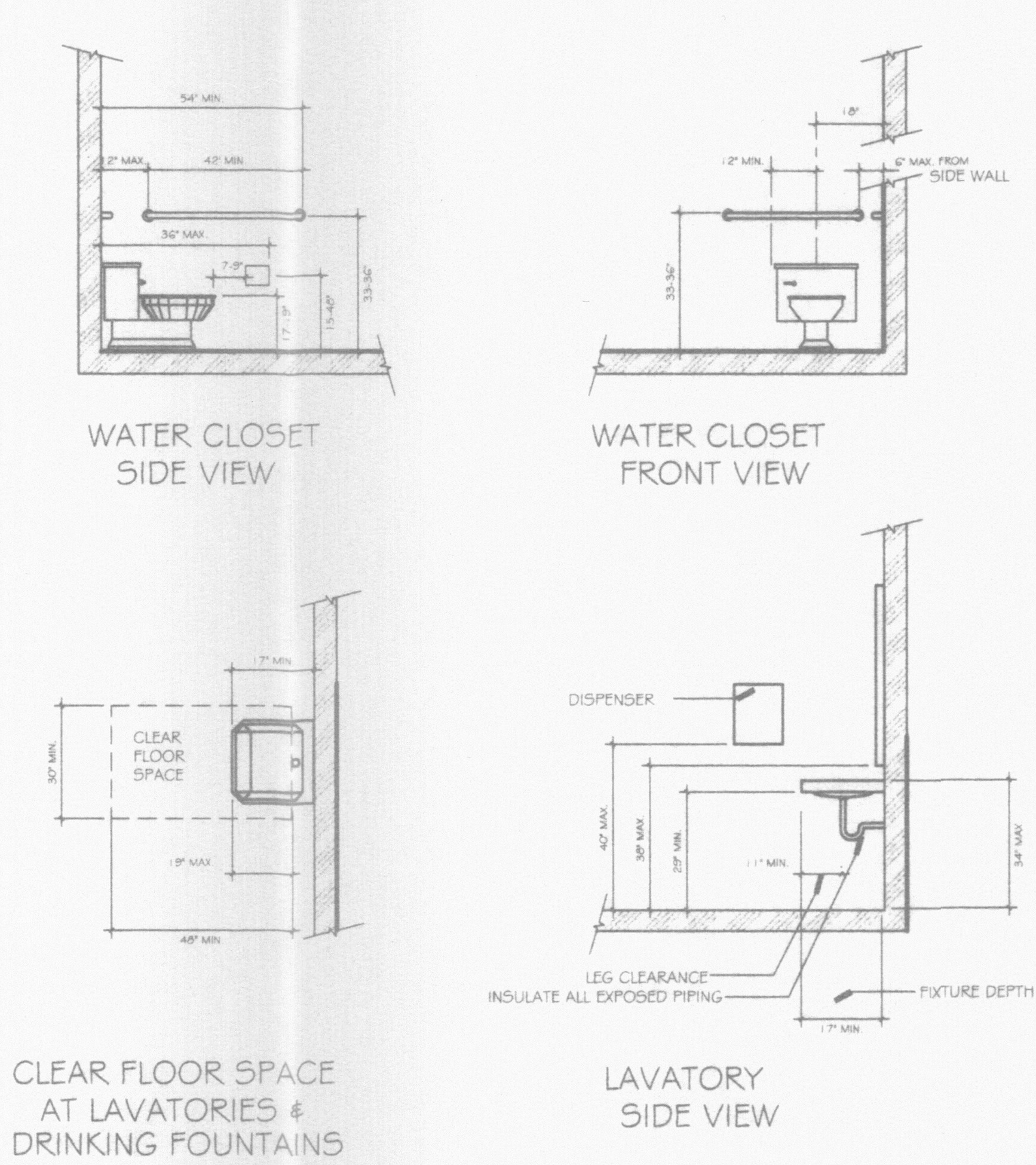
4 / A-2 SHOWER

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



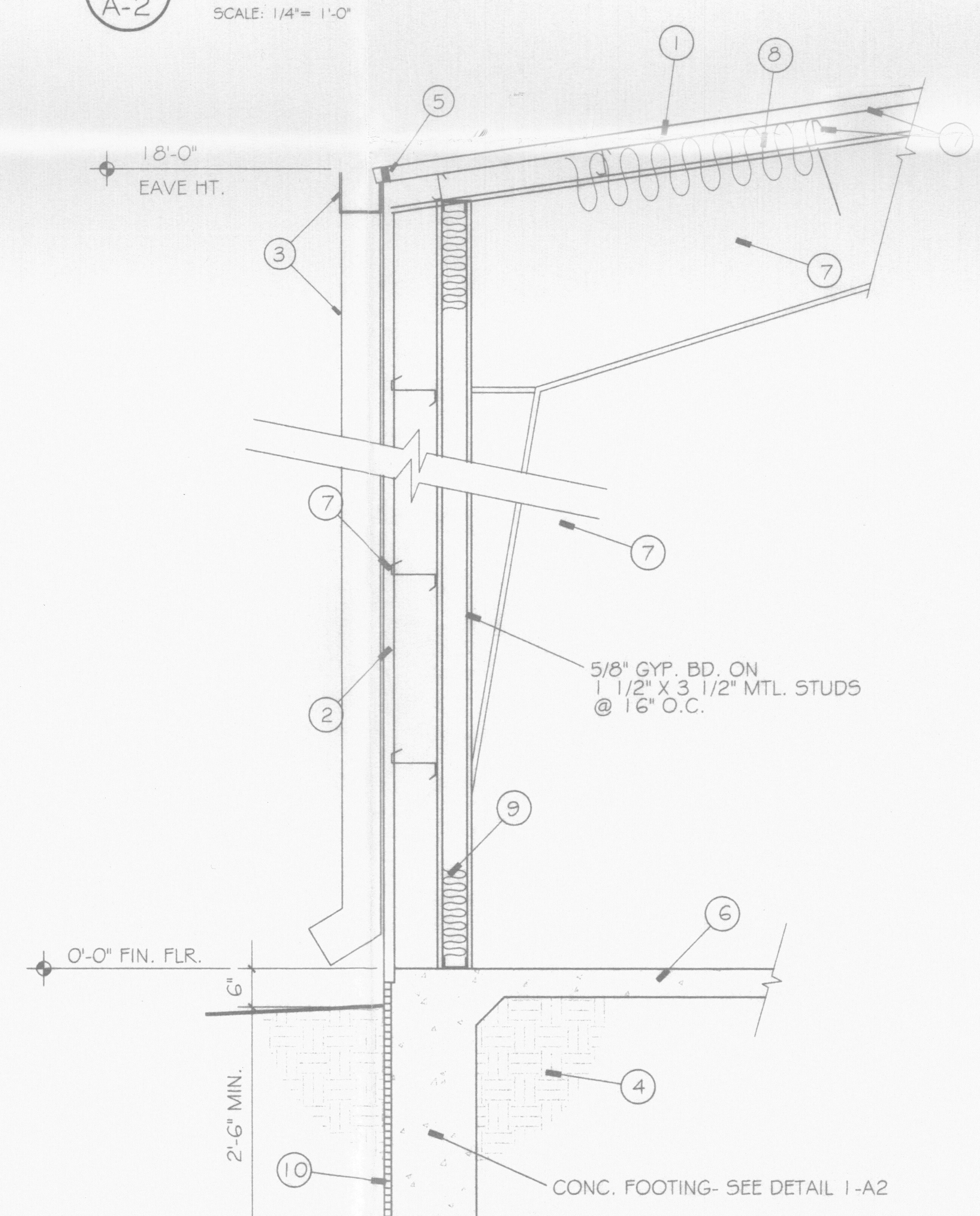
3 / A-2 BREAK ROOM

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



2 / A-2 MOUNTING HEIGHTS

N.T.S.



1 / A-2 WALL SECTION

SCALE: 3/4" = 1'-0"

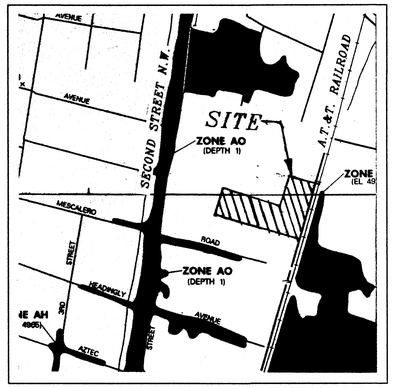
BRITTON CONSTRUCTION INC.
JIM ROUPAS

Jack Harris-Architects, Inc.

SUNLAND INTERNATIONAL NAVASTAR
AT DORSAR INDUSTRIAL PARK
GALLUP, NEW MEXICO

DATE:
11/ 1/99
11/15/99
12/3/99
2/18/00

SHEET NO.
A-2



FIRM MAP PANEL 119 AND 332 OF 825

SCALE: 1" = 500'

THE FOLLOWING ARE THE DRAINAGE CALCULATIONS FOR THE MASTER GRADING AND DRAINAGE PLAN INCLUDED HERE TO ASSIST THE REVIEW PROCESS.

DRAINAGE PLAN

The following items concerning the Dorsar Industrial Park Drainage Plan are contained herein:

1. Vicinity Map
2. Grading Plan
3. Drainage Plan

As shown by the Vicinity Map, the site is located between Griegos Road N.W. and Mescalero Road N.W., east of Second Street N.W. and directly west of the A.T. & S.F. Railroad Right-of-Way. At present, the site is undeveloped.

As shown by Panels 119 and 332 of 825 of the National Flood Insurance Program Flood Insurance Rate Maps published by F.E.M.A. for the County of Bernalillo, New Mexico, and Incorporated Areas, dated September 20, 1996, the site does not lie within a designated flood hazard zone. Offsite flows enter the site from the adjacent land to the east, as well as a small amount from the northeast. These offsite flows were calculated to total 2.37 cfs. These flows will not be blocked and will be allowed to pass through the site to their historic outfall. The proposed construction consists of rough grading the site for three future buildings. Also proposed is a 30' face-to-face paved access road with an 8" sanitary sewer line and 6" waterline with services. The road will have a 40' cul-de-sac at the east end.

The Grading Plan shows: 1) existing and proposed grades indicated by spot elevations and contours at 1'0" and 2'0" intervals, 2) supplemental spot elevations, 4) the limit and character of the existing improvements, 3) the limit and character of the proposed improvements, and 5) continuity between existing and proposed grades. As shown by this plan, detention ponding is proposed to mitigate the increase in runoff attributable to the introduction of impervious areas upon the site. The entire site will drain to a pond located at the southwest corner. The pond will drain via an automatic pumping system which will discharge via an existing 4" PVC pump discharge line into an existing private storm drain (forced main). These flows then discharge to an existing storm inlet on the east side of Second Street N.W. The pump has been sized as to allow for the complete evacuation of the developed and offsite V100 within a 24-hour period. The pond has been sized to detain the entire developed V100 for an industrial park scenario, as well as V100 offsite from adjacent properties contributing. The maximum water surface level was calculated to be one foot below the top of berm, allowing a foot of freeboard (the equivalent of 13,445 cubic feet of excess pond volume) before any overflow situations could occur. The pond was located utilizing zoning requirements for R-1 and M-1 zoning per the Comprehensive City Zoning Code. These requirements call for 15' setbacks from existing as well as proposed buildings. In the event that the pumping system were to temporarily fail, the pond has been sized to detain the full volume of runoff discussed above.

The Calculations which appear hereon analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Procedure for 40-acre and Smaller Basins, as set forth in the Revision of Section 22.2, Hydrology of the Development Process Manual, Volume 2, Design Criteria, dated January, 1993, has been used to quantify the peak rate of discharge and volume of runoff generated. As shown by these calculations, runoff volume and peak discharge rate will increase with the proposed development. However, this increase will not negatively impact downstream conditions due to the detention of flows, as previously noted.

Review of Panels 119 and 332 of 825 of the National Flood Insurance Program Flood Insurance Rate Maps indicates flooding withing Second Street N.W. This flooding demonstrates limited downstream capacity. This fact was recognized by the previous submittal for this site. This submittal requires the relocation of the existing lift station design and built as a result of the previous submittal. The ability to discharge from this site is a function of the existing private forced main in place. As the site is topographically lower than Second Street N.W., the use of a lift station to convey flows offsite, is thereby necessitated. The calculated rate of discharge, determined by the lift station pump, is 140 GPM or 0.31 cfs. The relocated lift station will continue to discharge through this forced main, which which in turn connects into the back of a storm inlet at Second Street N.W.

CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6-100} = P_{360} =$ 2.35 in.
3. Total Area (A_T) = 140,320 sf; 3.2 ac.
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	128,320/2.9	91
D	12,000/0.3	09

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
B	14,030/0.3	10
D	126,290/2.9	90

6. Offsite Basin Land Treatment

Treatment	Area (sf/ac)	%
C	3,500/0.08	15
D	19,550/0.45	85

7. Existing Condition

A. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$

$E_W = [(1.13)(2.9)+(2.12)(0.3)]/3.2 = 1.22$ in.

$V_{100} = (E_W/12)A_T$

$V_{100} = (1.22/12)3.2 = 0.3261$ ac.ft.; 14,200 cf

B. Peak Discharge

$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$

$Q_P = Q_{100} = (3.14)(2.9)+(4.70)(0.3) = 10.5$ cfs

8. Offsite Basin

A. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$

$E_W = [(1.13)(0.08)+(2.12)(0.45)]/0.53 = 1.97$ in.

$V_{100} = (E_W/12)A_T$

$V_{100} = (1.97/12)0.53 = 0.0870$ ac.ft.; 3,790 cf

B. Peak Discharge

$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$

$Q_P = Q_{100} = (3.14)(0.08)+(4.70)(0.45) = 2.37$ cfs

9. Developed Condition

A. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$

$E_W = [(1.13)(0.3)+(2.12)(2.9)]/3.2 = 2.03$ in.

$V_{100} = (E_W/12)A_T$

$V_{100} = (2.03/12)3.2 = 0.5406$ ac.ft.; 23,550 cf

B. Peak Discharge

$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$

$Q_P = Q_{100} = (3.14)(0.3)+(4.70)(2.9) = 14.6$ cfs

10. Comparison

A. Δ V_{100} = 23,550 − 14,200 = 9,350 cf; 0.2145 ac.ft. (increase)

B. Δ Q_{100} = 14.6 − 10.5 = 4.1 cfs (increase)

11. Pond Calculations

A. Pond Volume

Elev	Area (sf)	Vol (cf)	Vol (cf)	Σ
62	1,880			
		3,080	3,080	
63	4,280			
		5,510	8,590	
64	6,740			
		8,040	16,630	
65	9,340			
		10,650	27,280	
66	11,960			
		13,445	40,725	
67	14,930			

100 Yr. W.S.L. at 66 therefore: 1 foot freeboard

B. Required Volume

V~s100~S (Developed) + V~s100~S (Offsite)

23,550 + 3,790 = 27,340 = V~srequired~S

V~spond~S > V~srequired~S

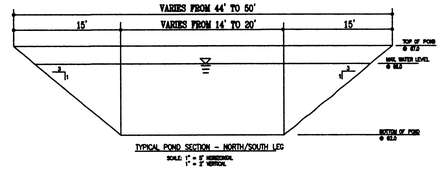
C. Required Pump Discharge Rate, R

R~srequired~S = V~s100, total~S/(3600 sec/hr * 24 hr.)

R~srequired~S = 27,340 ft~S3~s/(3600 sec/hr * 24 hr.)

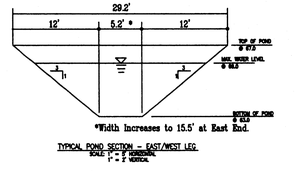
R~srequired~S = 0.316 ft~S3~s/s; 140 GPM

Therefore: Requires 1.0 HP Hydromatic SPD 100H Submersible Effluent Pump or Approved Equal



TYPICAL POND SECTION - NORTH/SOUTH LEG

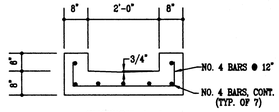
SCALE: 1" = 5' HORIZONTAL
1" = 2' VERTICAL



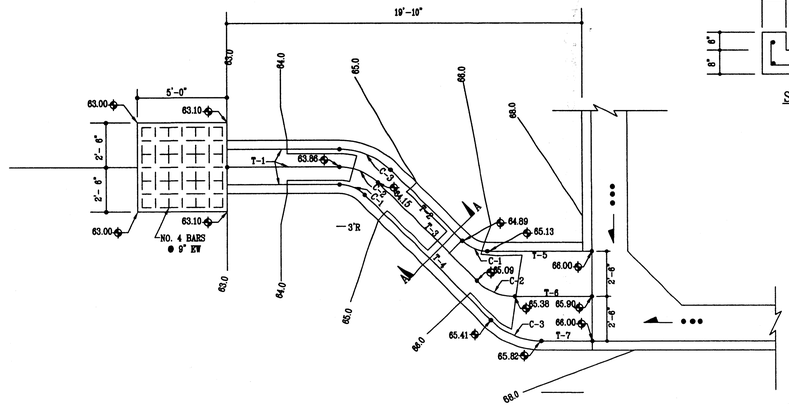
*Width increases to 15.5' at East End.

TYPICAL POND SECTION - EAST/WEST LEG

SCALE: 1" = 5' HORIZONTAL
1" = 2' VERTICAL



SECTION A-A



CURVE/TANGENT	DELTA	R	LENGTH
C-1	45°	2'	1.57'
C-2	45°	3'	2.36'
C-3	45°	4'	3.14'
T-1			6.27
T-2			5.65
T-3			7.77
T-4			9.89
T-5			5.84
T-6			4.34
T-7			2.84

CONCRETE RUNDOWN DETAIL

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

CALCULATIONS - THIS PHASE

Percentages of land treatments A and B do not change from the MP calculations.

It was necessary to adjust pond volumes slightly to ensure that the pond has adequate capacity and and was within the prescribed setback limits. The revised pond volume calculations follow:

Elev	Area (sf)	Vol (cf)	Σ Vol (cf)
62	1,939		
		3,208	3,208
63	4,477		
		5,762	8,970
64	7,048		
		8,369	17,339
65	9,690		
		11,045	28,384
66	12,401		
		13,791	42,175
67	15,181		

100 Yr. W.S.L. at 66 therefore: 1 foot freeboard

DRAINAGE BASIN "B" - PEAK DISCHARGE:

Drainage Basin "B" flows to the pond through the rundown in the SW corner of the

Drainage Basin "A" flows to the pond through previously constructed rundowns.

Area of Drainage Basin "B" = 70,750 sf (1.6242 acres).

Area of Drainage Basin "B" = 70,750 sf (1.6242 acres).

$Q_P = + Q_{PD}A_D$

$Q_P = 4.70 \times 1.6242 = 7.64$ cfs

RUNDOWN CALCULATIONS:

Calculate entrance width using Weir Equation:

$Q = C\,L\,H^{3/2}$ C = 3.0 H = 0.67'

$L = Q\,(\,C\,H^{3/2}) = 7.64 / (3.0 \times 0.67^{3/2}) = 4.60'$ (Use 5.0')

Calculate Rundown Channel Capacity using Manning's Equation:

Assume flow depth = 4", 0.33' Width is 2.0'

Area = 2 x 0.33 = 0.66'

P = 2 + 2(.33) = 2.66' R = A/'P = 0.66/2.66 = 0.2481

$V = (1.486/n)\,R^{2/3}S^{1/2} = (1.486 / 0.013)\,(0.2481)^{2/3}(0.1212)^{1/2} = 15.70$ fps

Q = AV = 0.66 x 15.70 = 10.36 cfs > 7.64 cfs

DRAINAGE CALCULATIONS AND DETAILS
SUNLAND INTERNATIONAL NAVASTAR
AT DORSAR INDUSTRIAL PARK
ALBUQUERQUE, NEW MEXICO

FRANK D. LOVELADY, P.E.
(505) 345-2287 * Fax (505) 345-2115 * 300 ALAMOSA RD. NW * Albuquerque, NM * 87107

JOB NO: 592

DATE: FEBRUARY 25, 2000

REVISIONS

SHEET NO. 2 OF 2

C:\ALLPROJECTS\PROJ592\SUNLAND2.DWG(FEBRUARY 25, 2000)

VICINITY MAP G-15

1" = 750' ±

SCALE: 1"=20'

LEGAL DESCRIPTION

TRACTS 3-A & 3-B OF TRACT 3, DORSAR INDUSTRIAL PARK, ALBUQUERQUE, NM 10/7/95

PROJECT BENCHMARK

A STANDARD NMSHC BRASS TABLET, STAMPED "STA.NM47-10" SET IN TOP OF A CONCRETE POST PROJECTING 0.1 FT. ABOVE THE GROUND. THE STATION IS LOCATED AT THE INTERSECTION OF SECOND STREET AND MISCALERO RD. N.W. IN THE CENTER OF THE MEDIAN STRIP OF SECOND ST.
ELEVATION = 4967.496 FEET (M.S.L.D.)

T.B.M.

T.B.M. #1; THE TOP OF THE S.E. BONNET BOLT OF A FIRE HYDRANT LOCATED NEAR THE NW PROPERTY CORNER AS SHOWN ON THE DRAWING.
ELEVATION = 4968.94 FEET (M.S.L.D.)

LEGEND

TCO	TOP OF CONCRETE
DIA.	DIAMETER
EA	EDGE OF ASPHALT
E/A	EDGE OF ASPHALT
BR	BOTTOM OF RAMP
L.P.	LIGHT POLE
P.P.	POWER POLE
FL	FLOWLINE
TW	TOP OF WALL
NG	NATURAL GRADE
U/G	UNDERGROUND
OV/H	OVERHEAD
	EXISTING CONTOUR
+ 66.37	EXISTING SPOT ELEVATION
	EXISTING SMALL SHRUB
	EXISTING GROUP OF SMALL TREES
SAS	EXISTING SANITARY SERVICE
W	EXISTING WATERLINE SERVICE
TC=68.67*	AS-CONST. SPOT ELEV.
	SHEET FLOW
67.20	NEW SPOT ELEVATION
68	NEW CONTOUR
	ROOF FLOW
RD	ROOF DRAIN

Construction Notes:

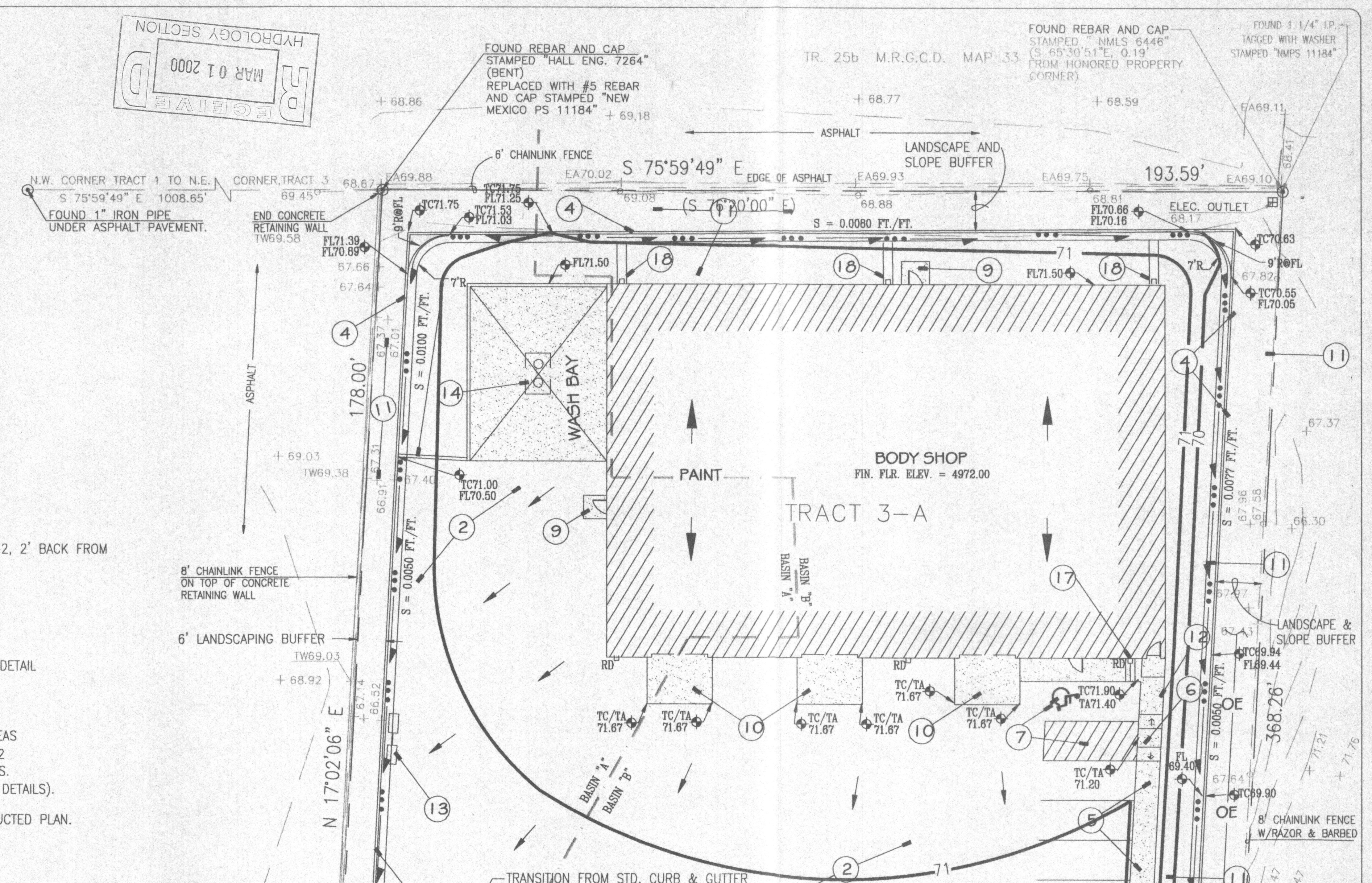
1. Two (2) working days prior to any excavation, contractor must contact New Mexico One Call System 260-1990 (Albuquerque Area), 1-800-321-ALERT(2537) (Statewide), for location of existing utilities.
2. Prior to construction, the contractor shall excavate and verify the horizontal and vertical location of all potential obstructions. Should a conflict exist, the contractor shall notify the engineer in writing so that the conflict can be resolved with a minimum amount of delay. The Contractor shall be responsible for all interpretations it makes without first contacting the Engineer as required above.
3. All work on this project shall be performed in accordance with applicable federal, state and local laws, rules and regulations concerning construction safety and health.
4. All construction within public right-of-way shall be performed in accordance with applicable City of Albuquerque Standards and Procedures.
5. If any utility lines, pipelines, or underground utility lines are shown on these drawings, they are shown in an approximate manner only, and such lines may exist where none are shown. If any such existing lines are shown, the location is based upon information provided by the owner of said utility, and the information may be incomplete, or may be obsolete by the time construction commences. The engineer has conducted only preliminary investigation of the location, depth, size, or type of existing utility lines, pipelines, or underground utility lines. This investigation is not conclusive, and may not be complete, therefore, makes no representation pertaining thereto, and assumes no responsibility or liability therefor. The contractor shall inform itself of the location of any utility line, pipeline, or underground utility line in or near the area of the work in advance of and during excavation work.
   The contractor is fully responsible for any and all damage caused by its failure to locate, identify and preserve any and all existing utilities, pipelines, and underground utility lines. In planning and conducting excavation, the contractor shall comply with state statutes, municipal and local ordinances, rules and regulations, if any, pertaining to the location of these lines and facilities.
6. The design of planters and landscaped areas is not part of this plan. All planters and landscaped areas adjacent to the building(s) shall be provided with positive drainage to avoid any ponding adjacent to the structure. For construction details, refer to landscaping plan.

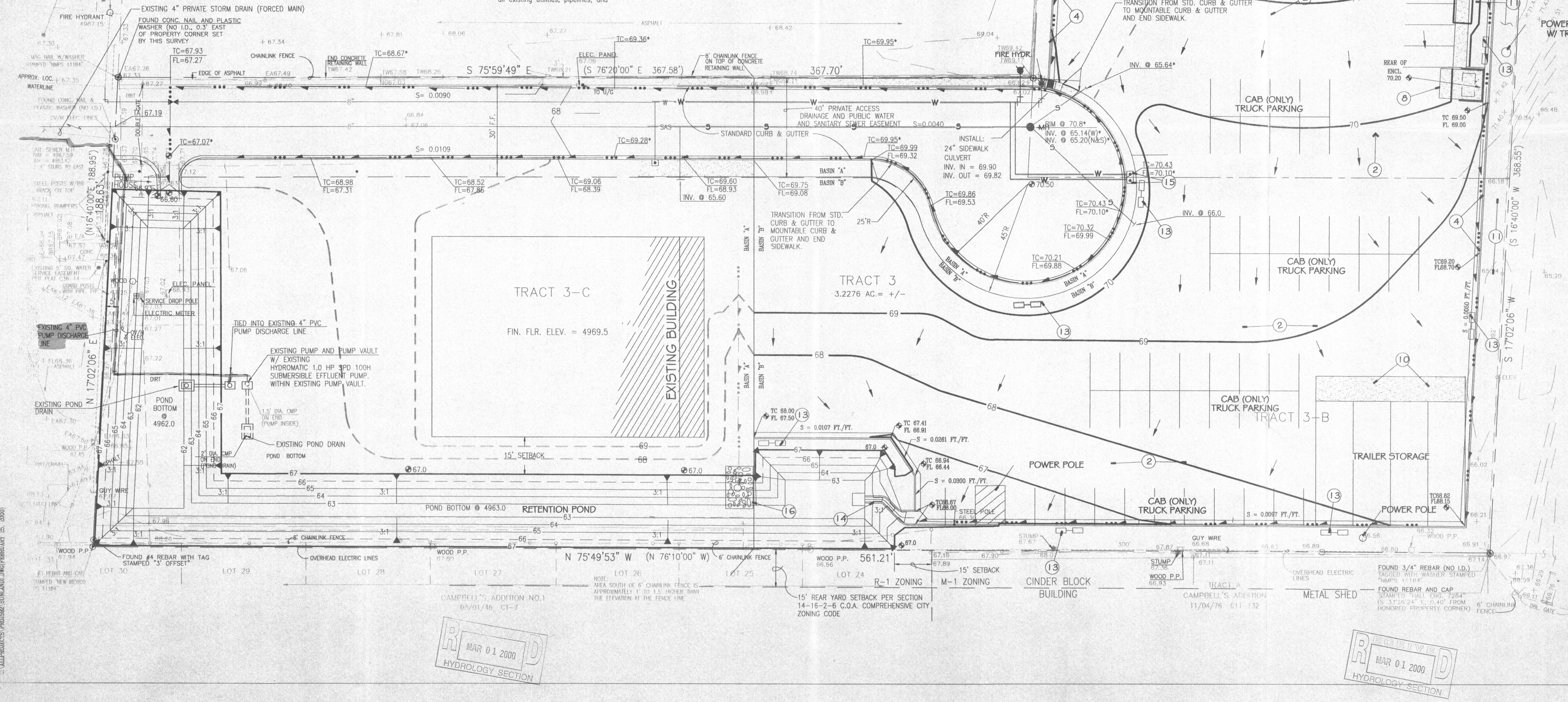
Erosion Control Measures:

1. The contractor shall ensure that no soil erodes from the site into public right-of-way or onto private property.
2. The contractor shall promptly clean up any material excavated within the public right-of-way so that the excavated material is not susceptible to being washed down the street.
3. The contractor shall secure "Topsoil Disturbance Permit" prior to beginning construction.

KEYED NOTES

1. (NOT USED).
2. ASPHALT PAVING.
3. POLE MOUNTED H.C. SIGN- SEE DETAIL 1/C-2, 2' BACK FROM CURBS.
4. EXTRUDED CONC. CURB AND/OR GUTTER.
5. CONC. SIDEWALK.
6. H.C. ACCESSIBLE CONC. RAMP - SEE 2/C-2.
7. 4" WIDE PARKING STRIPING, H.C. SYMBOLS & MARKINGS @ 36" O.C.
8. 6" CONC. REFUSE PAD & ENCLOSURES, SEE DETAIL 3/C-2.
9. 5'x5' CONCRETE STOOP
10. 6" CONC. APRON- (12' X 5')
11. CRUSHER FINES GRAVEL IN UNDEVELOPED AREAS
12. HANDICAPPED/VAN PARKING SIGN- SEE 1/C-2
13. POLE MOUNTED SITE LIGHTS- SEE ELEC. DWGS.
14. CONCRETE RUNDOWN (SEE SHT. 2 OF 2 FOR DETAILS).
15. NEW WATER METER- V.I.F.
16. RIPRAP RUNDOWN PER CERTIFIED AS-CONSTRUCTED PLAN.
17. ROOF DRAIN & SIDEWALK CULVERT.
18. ROOF DRAIN AND 24" X 6" CONC. RUNDOWN





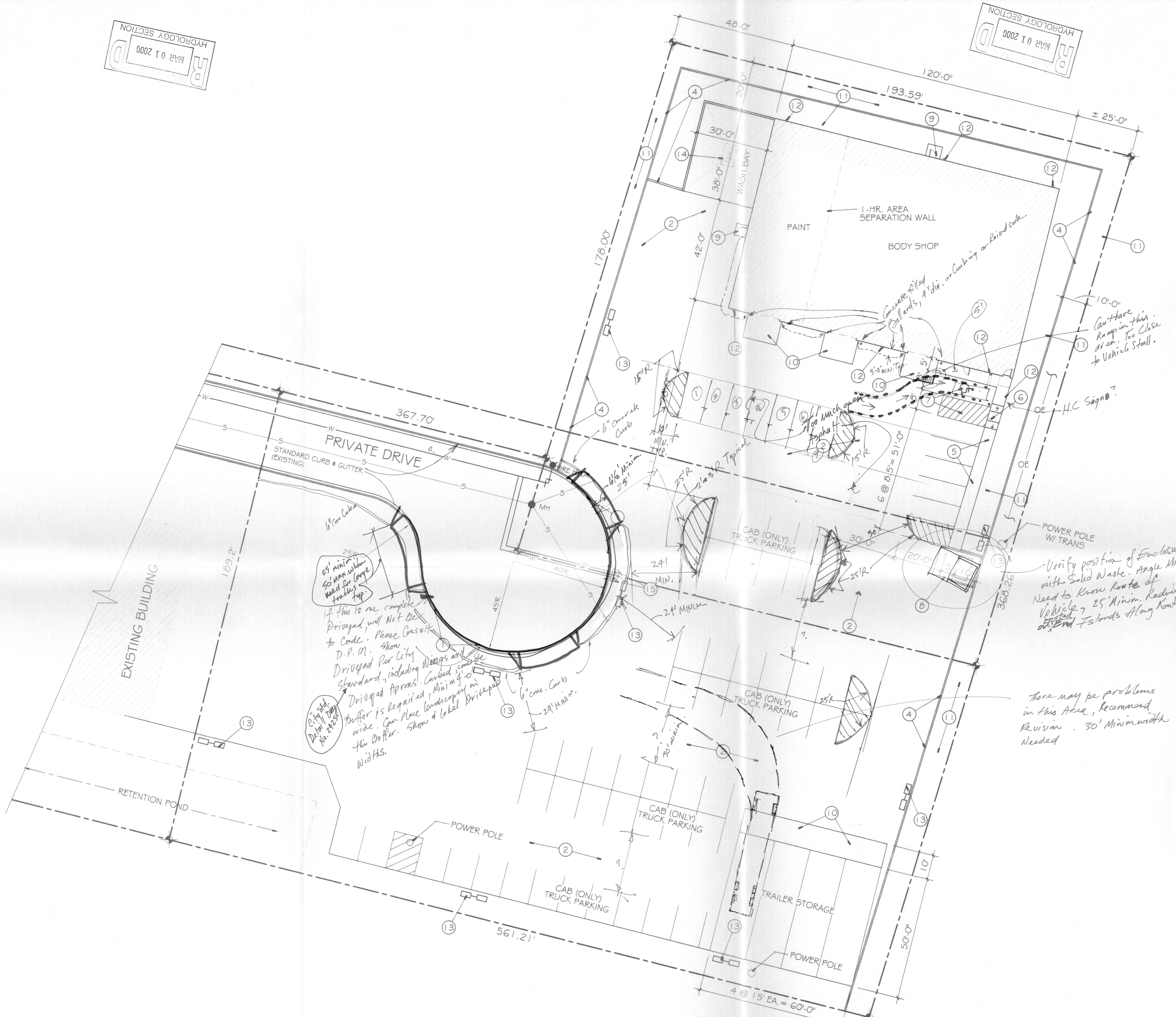
GRADING AND DRAINAGE PLAN
SUNLAND INTERNATIONAL NAVASTAR
AT DORSAR INDUSTRIAL PARK
ALBUQUERQUE, NEW MEXICO

FRANK D. LOVELADY, P.E.
(505) 345-2267 * Fax (505) 345-2115 * 300 ALAMOSA RD. NW * Albuquerque, NM * 87107

FRANK D. LOVELADY, NEW MEXICO, 6512, REGISTERED PROFESSIONAL ENGINEER, FEBRUARY 2000

JOB NO: 592
DATE: FEBRUARY 25, 2000
REVISIONS

SHEET NO. 1 OF 2



SITE PLAN

SCALE: 1" = 20'-0"

PROJECT DATA

OWNER: PAUL A. BRENNAND, B.W. PROPERTIES, INC., 1310 CALLE DEL REY, SANTA FE, NM 87501

CONTRACTOR: BRITTON CONSTRUCTION, INC., ALBQ, NEW MEXICO 87108

LEGAL DESCRIPTION: TRACT 3-A & 3-B OF TRACT 3, DORSAR INDUSTRIAL PARK, ALBUQUERQUE, NM 10/7/95

OCCUPANCY GROUP: OFFICE B-2 (LESS THAN 9%), REPAIR GARAGE H-4

OCCUPANT LOAD: OFFICES - 734 @ 100= 7.3; WAREHOUSE - 8866 @ 500= 17.9

TOTAL SQUARE FOOTAGE: 9,600 S.F.; AREA SEPARATION WALL @ 7,200 S.F.

TYPE OF CONSTRUCTION: II-N

SEISMIC ZONE: 2-B

SOIL BEARING: 2,000 PSF (ASSUMED)

CONCRETE STRENGTH: 3,000 PSI

PARKING:
REQUIRED: (8) SPACES, (1) ACCESSIBLE
PROVIDED: (8) SPACES, (1) ACCESSIBLE

LANDSCAPING:
REQUIRED: (78,902 - 10,740) x 15% = 11,836 SF
PROVIDED: 11,900 SF

KEYED NOTES

1. NEW CONC. DRIVE.
2. ASPHALT PAVING.
3. POLE MOUNTED H.C. SIGN- SEE DETAIL 1/C-2, 2' BACK FROM CURBS.
4. EXTRUDED CONC. CURB AND/OR GUTTER.
5. CONC. SIDEWALK., 6" High.
6. H.C. ACCESSIBLE CONC. RAMP - SEE 2/C-2.
7. 4" WIDE PARKING STRIPING, H.C. SYMBOLS & MARKINGS @ 36" O.C.
8. 6" CONC. REFUSE PAD & ENCLOSURES, SEE DETAIL 3/C-2.
9. 5'x5' CONCRETE STOOP
10. 6" CONC. APRON- (12' X 5')
11. CRUSHER FINES GRAVEL IN UNDEVELOPED AREAS
12. MTL. GUTTER & DOWNSPOUT, W/ TRENCH DRAIN @ SIDEWALK.
13. POLE MOUNTED SITE LIGHTS- SEE ELEC. DWGS.
14. SANDTRAP- VERIFY LOCATION W/ PLUMBING PLAN
15. NEW WATER METER- V.I.F.

INDEX TO DRAWINGS

D. R. B. SITE PLAN 3/27

Not in Cabinet - 3/6

BRITTON CONSTRUCTION INC. JIM ROUPAS

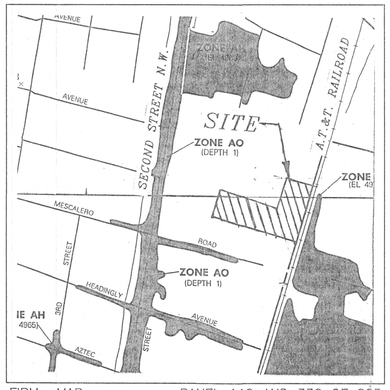
Jack Harris-Architects, Inc.

SUNLAND INTERNATIONAL NAVASTAR

AT DORSAR INDUSTRIAL PARK
GALLUP, NEW MEXICO

DATE:
11/1/99
11/15/99
12/3/99
2/18/00

SHEET NO.
C-1



FIRM MAP PANEL 119 AND 332 OF 825

SCALE: 1" = 500'

THE FOLLOWING ARE THE DRAINAGE CALCULATIONS FOR THE MASTER GRADING AND DRAINAGE PLAN INCLUDED HERE TO ASSIST THE REVIEW PROCESS.

DRAINAGE PLAN

The following items concerning the Dorsar Industrial Park Drainage Plan are contained herein:

1. Vicinity Map
2. Grading Plan
3. Drainage Plan

As shown by the Vicinity Map, the site is located between Griegos Road N.W. and Mescalero Road N.W., east of Second Street N.W. and directly west of the A.T. & S.F. Railroad Right-of-Way. At present, the site is undeveloped.

As shown by Panels 119 and 332 of 825 of the National Flood Insurance Program Flood Insurance Rate Maps published by F.E.M.A. for the County of Bernalillo, New Mexico, and Incorporated Areas, dated September 20, 1996, the site does not lie within a designated flood hazard zone. Offsite flows enter the site from the adjacent land to the east, as well as a small amount from the northeast. These offsite flows were calculated to total 2.37 cfs. These flows will not be blocked and will be allowed to pass through the site to their historic outfall. The proposed construction consists of rough grading the site for three future buildings. Also proposed is a 30' face-to-face paved access road with an 8" sanitary sewer line and 6" waterline with services. The road will have a 40' cul-de-sac at the east end.

The Grading Plan shows: 1) existing and proposed grades indicated by spot elevations and contours at 1'0" and 2'0" intervals, 2) supplemental spot elevations, 4) the limit and character of the existing improvements, 3) the limit and character of the proposed improvements, and 5) continuity between existing and proposed grades. As shown by this plan, detention ponding is proposed to mitigate the increase in runoff attributable to the introduction of impervious areas upon the site. The entire site will drain to a pond located at the southwest corner. The pond will drain via an automatic pumping system which will discharge via an existing 4" PVC pump discharge line into an existing private storm drain (forced main). These flows then discharge to an existing storm inlet on the east side of Second Street N.W. The pump has been sized as to allow for the complete evacuation of the developed and offsite V100 within a 24-hour period. The pond has been sized to detain the entire developed V100 for an industrial park scenario, as well as V100 offsite from adjacent properties contributing. The maximum water surface level was calculated to be one foot below the top of berm, allowing a foot of freeboard (the equivalent of 13,445 cubic feet of excess pond volume) before any overflow situations could occur. The pond was located utilizing zoning requirements for R-1 and M-1 zoning per the Comprehensive City Zoning Code. These requirements call for 15' setbacks from existing as well as proposed buildings. In the event that the pumping system were to temporarily fail, the pond has been sized to detain the full volume of runoff discussed above.

The Calculations which appear hereon analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Procedure for 40-acre and Smaller Basins, as set forth in the Revision of Section 22.2, Hydrology of the Development Process Manual, Volume 2, Design Criteria, dated January, 1993, has been used to quantify the peak rate of discharge and volume of runoff generated. As shown by these calculations, runoff volume and peak discharge rate will increase with the proposed development. However, this increase will not negatively impact downstream conditions due to the detention of flows, as previously noted.

Review of Panels 119 and 332 of 825 of the National Flood Insurance Program Flood Insurance Rate Maps indicates flooding withing Second Street N.W. This flooding demonstrates limited downstream capacity. This fact was recognized by the previous submittal for this site. This submittal requires the relocation of the existing lift station design and built as a result of the previous submittal. The ability to discharge from this site is a function of the existing private forced main in place. As the site is topographically lower than Second Street N.W., the use of a lift station to convey flows offsite, is thereby necessitated. The calculated rate of discharge, determined by the lift station pump, is 140 GPM or 0.31 cfs. The relocated lift station will continue to discharge through this forced main, which which in turn connects into the back of a storm inlet at Second Street N.W.

CALCULATIONS

Site Characteristics

1. Precipitation Zone = 2
2. $P_{6-100} = P_{360} =$ 2.35 in.
3. Total Area (A_T) = 140,320 sf; 3.2 ac.
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	128,320/2.9	91
D	12,000/0.3	09

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
B	14,030/0.3	10
D	126,290/2.9	90

6. Offsite Basin Land Treatment

Treatment	Area (sf/ac)	%
C	3,500/0.08	15
D	19,550/0.45	85

7. Existing Condition

A. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$

$E_W = [(1.13)(2.9)+(2.12)(0.3)]/3.2 = 1.22$ in.

$V_{100} = (E_W/12)A_T$

$V_{100} = (1.22/12)3.2 = 0.3261$ ac.ft.; 14,200 cf

B. Peak Discharge

$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$

$Q_P = Q_{100} = (3.14)(2.9)+(4.70)(0.3) = 10.5$ cfs

8. Offsite Basin

A. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$

$E_W = [(1.13)(0.08)+(2.12)(0.45)]/0.53 = 1.97$ in.

$V_{100} = (E_W/12)A_T$

$V_{100} = (1.97/12)0.53 = 0.0870$ ac.ft.; 3,790 cf

B. Peak Discharge

$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$

$Q_P = Q_{100} = (3.14)(0.08)+(4.70)(0.45) = 2.37$ cfs

9. Developed Condition

A. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$

$E_W = [(1.13)(0.3)+(2.12)(2.9)]/3.2 = 2.03$ in.

$V_{100} = (E_W/12)A_T$

$V_{100} = (2.03/12)3.2 = 0.5406$ ac.ft.; 23,550 cf

B. Peak Discharge

$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$

$Q_P = Q_{100} = (3.14)(0.3)+(4.70)(2.9) = 14.6$ cfs

10. Comparison

A. Δ V_{100} = 23,550 – 14,200 = 9,350 cf; 0.2145 ac.ft. (increase)

B. Δ Q_{100} = 14.6 – 10.5 = 4.1 cfs (increase)

11. Pond Calculations

A. Pond Volume

Elev	Area (sf)	Vol (cf)	Vol (cf)	Σ
62	1,880			
		3,080	3,080	
63	4,280			
		5,510	8,590	
64	6,740			
		8,040	16,630	
65	9,340			
		10,650	27,280	
66	11,960			
		13,445	40,725	
67	14,930			

100 Yr. W.S.L. at 66 therefore: 1 foot freeboard

B. Required Volume

V~s100~S (Developed) + V~s100~S (Offsite)

23,550 + 3,790 = 27,340 = V~srequired~S

V~spond~S > V~srequired~S

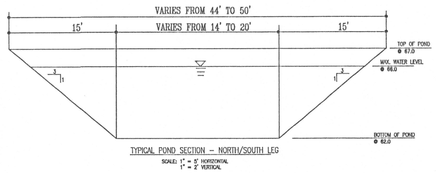
C. Required Pump Discharge Rate, R

R~srequired~S = V~s100, total~S/(3600 sec/hr * 24 hr.)

R~srequired~S = 27,340 ft~S3~s/(3600 sec/hr * 24 hr.)

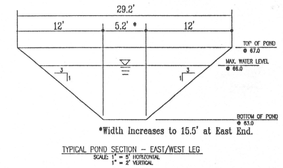
R~srequired~S = 0.316 ft~S3~s/s; 140 GPM

Therefore: Requires 1.0 HP Hydromatic SPD 100H Submersible Effluent Pump or Approved Equal



TYPICAL POND SECTION – NORTH/SOUTH LEG

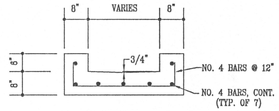
SCALE: 1" = 5' HORIZONTAL, 1" = 2' VERTICAL



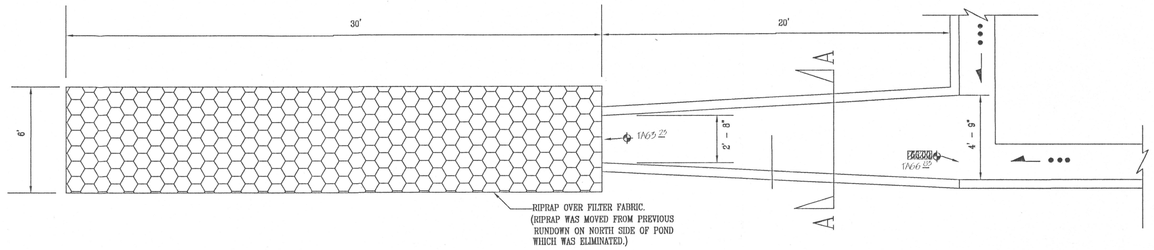
*Width Increases to 15.5' at East End.

TYPICAL POND SECTION – EAST/WEST LEG

SCALE: 1" = 5' HORIZONTAL, 1" = 2' VERTICAL



SECTION A-A



CONCRETE RUNDOWN DETAIL

SCALE: 1/4" = 1' – 0"

CALCULATIONS – THIS PHASE

Percentages of land treatments A and B do not change from the MP calculations.

It was necessary to adjust pond volumes slightly to ensure that the pond has adequate capacity and and was within the prescribed setback limits. The revised pond volume calculations follow:

Elev	Area (sf)	Vol (cf)	Σ Vol (cf)
62	1,939		
		3,208	3,208
63	4,477		
		5,762	8,970
64	7,048		
		8,369	17,339
65	9,690		
		11,045	28,384
66	12,401		
		13,791	42,175
67	15,181		

100 Yr. W.S.L. at 66 therefore: 1 foot freeboard

DRAINAGE BASIN "B" – PEAK DISCHARGE:

Drainage Basin "B" flows to the pond through the rundown in the SW corner of the Drainage Basin "A" flows to the pond through previously constructed rundowns.
Area of Drainage Basin "B" = 70,750 sf (1.6242 acres).

Area of Drainage Basin "B" = 70,750 sf (1.6242 acres).

$Q_P = + Q_{PD}A_D$

$Q_P = 4.70 \times 1.6242 = 7.64$ cfs

RUNDOWN CALCULATIONS:

Calculate entrance width using Weir Equation:

$Q = C\,L\,H^{3/2}$ C = 3.0 H = 0.67'

$L = Q\,(C\,H^{3/2}) = 7.64 / (3.0 \times 0.67^{3/2}) = 4.60'$ (Use 4.75) Revised 11/17/2000

Calculate Rundown Channel Capacity using Manning's Equation:
Assume flow depth = 4", 0.33' Width is 2.0'

Area – 2 x 0.33 = 0.66'

P = 2 + 2(.33) = 2.66' R = A/'P = 0.66/2.66 = 0.2481

$V = (1.486/n)\,R^{2/3}S^{1/2} = (1.486 / 0.013)\,(0.2481)^{2/3}(0.1212)^{1/2} = 15.70$ fps

Q = AV = 0.66 x 15.70 = 10.36 cfs > 7.64 cfs

ALTERNATE RUNDOWN – TYPE "VL" RIPRAP:

Calculate Rundown Channel Capacity using Manning's Equation:
Assume flow depth = 3", 0.25' Width is 5.0'

Area – 0.25 X 5.0 + 0.25 X 0.25 = 1.31 SF

P = 5.0 + 2 (0.35) = 5.7' R = A/'P = 1.31/5.7 = 0.2298

$V = (1.486/n)\,R^{2/3}S^{1/2} = (1.486 / 0.035)\,(0.2298)^{2/3}(0.1398)^{1/2} = 5.95$ fps

Q = AV = 0.66 x 15.70 = 10.36 cfs > 7.64 cfs

AS-CONSTRUCTED
DRAINAGE CALCULATIONS AND DETAILS
SUNLAND INTERNATIONAL NAVASTAR
AT DORSAR INDUSTRIAL PARK
ALBUQUERQUE, NEW MEXICO

REVIEWED NOV 17 2000 HYDROLOGY SECTION

FRANK D. LOVELADY, P.E.
(505) 345-2257 * Fax (505) 345-2115 * 300 ALAMOSA RD. NW * Albuquerque, NM * 87107

JOB NO: 592
DATE: NOVEMBER 17, 2000
REVISIONS

REVIEWED NOV 17 2000 HYDROLOGY SECTION

SHEET NO. 2 OF 2

VICINITY MAP G-15

SCALE: 1" = 750'±

LEGAL DESCRIPTION

TRACTS 3-A & 3-B OF TRACT 3, DORSAR INDUSTRIAL PARK, ALBUQUERQUE, NM 10/7/95

PROJECT BENCHMARK

A STANDARD NMSHC BRASS TABLET, STAMPED "STA.NM47-10" SET IN TOP OF A CONCRETE POST PROJECTING 0.1 FT. ABOVE THE GROUND. THE STATION IS LOCATED AT THE INTERSECTION OF SECOND STREET AND MISCALERO RD. N.W. IN THE CENTER OF THE MEDIAN STRIP OF SECOND ST. ELEVATION = 4967.496 FEET (M.S.L.D.)

T.B.M.

T.B.M. #1: THE TOP OF THE S.E. BONNET BOLT OF A FIRE HYDRANT LOCATED NEAR THE NW PROPERTY CORNER AS SHOWN ON THE DRAWING. ELEVATION = 4968.94 FEET (M.S.L.D.)

LEGEND

TCO	TOP OF CONCRETE
DIA.	DIAMETER
EA	EDGE OF ASPHALT
E/A	EDGE OF ASPHALT
BR	BOTTOM OF RAMP
L.P.	LIGHT POLE
P.P.	POWER POLE
FL	FLOWLINE
TW	TOP OF WALL
NG	NATURAL GRADE
U/G	UNDERGROUND
OV/H	OVERHEAD
———	EXISTING CONTOUR
+ 66.37	EXISTING SPOT ELEVATION
	EXISTING SMALL SHRUB
	EXISTING GROUP OF SMALL TREES
SAS	EXISTING SANITARY SERVICE
W	EXISTING WATERLINE SERVICE
TC=68.67*	AS-CONST. SPOT ELEV.
	SHEET FLOW
67.20	NEW SPOT ELEVATION
68	NEW CONTOUR
	ROOF FLOW
RD	ROOF DRAIN

SCALE:1"=20'

ENGINEER'S CERTIFICATION:

HAVING FIELD-INSPECTED THE SITE AND HAVING TAKEN SPOT ELEVATIONS AT CRITICAL LOCATIONS, I HEREBY CERTIFY THAT THE AS-CONSTRUCTED FACILITY IS IN SUBSTANTIAL CONFORMANCE WITH THE APPROVED GRADING AND DRAINAGE PLAN WITH ENGINEER'S STAMP DATED FEBRUARY 25, 2000.

Frank D Lovelady November 17, 2000

FRANK D. LOVELADY N.M.P.E. 6512 DATE

Construction Notes:

1. Two (2) working days prior to any excavation, contractor must contact New Mexico One Call System 260-1990 (Albuquerque Area), 1-800-321-ALERT(2537) (Statewide), for location of existing utilities.
2. Prior to construction, the contractor shall excavate and verify the horizontal and vertical location of all potential obstructions. Should a conflict exist, the contractor shall notify the engineer in writing so that the conflict can be resolved with a minimum amount of delay. The Contractor shall be responsible for all interpretations it makes without first contacting the Engineer as required above.
3. All work on this project shall be performed in accordance with applicable federal, state and local laws, rules and regulations concerning construction safety and health.
4. All construction within public right-of-way shall be performed in accordance with applicable City of Albuquerque Standards and Procedures.
5. If any utility lines, pipelines, or underground utility lines are shown on these drawings, they are shown in an approximate manner only, and such lines may exist where none are shown. If any such existing lines are shown, the location is based upon information provided by the owner of said utility, and the information may be incomplete, or may be obsolete by the time construction commences. The engineer has conducted only preliminary investigation of the location, depth, size, or type of existing utility lines, pipelines, or underground utility lines. This investigation is not conclusive, and may not be complete, therefore, makes no representation pertaining thereto, and assumes no responsibility or liability therefor. The contractor shall inform itself of the location of any utility line, pipeline, or underground utility line in or near the area of the work in advance of and during excavation work.

   The contractor is fully responsible for any and all damage caused by its failure to locate, identify and preserve any and all existing utilities, pipelines, and underground utility lines. In planning and conducting excavation, the contractor shall comply with state statutes, municipal and local ordinances, rules and regulations, if any, pertaining to the location of these lines and facilities.
6. The design of planters and landscaped areas is not part of this plan. All planters and landscaped areas adjacent to the building(s) shall be provided with positive drainage to avoid any ponding adjacent to the structure. For construction details, refer to landscaping plan.

Erosion Control Measures:

1. The contractor shall ensure that no soil erodes from the site into public right-of-way or onto private property.
2. The contractor shall promptly clean up any material excavated within the public right-of-way so that the excavated material is not susceptible to being washed down the street.
3. The contractor shall secure "Topsoil Disturbance Permit" prior to beginning construction.

KEYED NOTES

1. (NOT USED).
2. ASPHALT PAVING.
3. POLE MOUNTED H.C. SIGN- SEE DETAIL 1/C-2, 2' BACK FROM CURBS.
4. CURB ALLEY GUTTER W/ 5' STAND-UP CURB EACH SIDE OF ROOF DRAINS.
5. CONC. SIDEWALK.
6. H.C. ACCESSIBLE CONC. RAMP - SEE 2/C-2.
7. 4" WIDE PARKING STRIPING, H.C. SYMBOLS & MARKINGS @ 36" O.C.
8. 6" CONC. REFUSE PAD & ENCLOSURES, SEE DETAIL 3/C-2.
9. 5'x5' CONCRETE STOOP
10. 6" CONC. APRON- (12' X 5')
11. DECORATIVE GRAVEL IN UNDEVELOPED AREAS
12. HANDICAPPED/VAN PARKING SIGN- SEE 1/C-2
13. POLE MOUNTED SITE LIGHTS- SEE ELEC. DWGS.
14. CONCRETE RUNDOWN (SEE SHT. 2 OF 2 FOR DETAILS).
15. NEW WATER METER- V.I.F.
16. RIPRAP RUNDOWN PER CERTIFIED AS-CONSTRUCTED PLAN.
17. ROOF DRAIN & SIDEWALK CULVERT.
18. ROOF DRAIN AND 24" X 6" CONC. RUNDOWN