



March 30, 2023

Jorge E Vergara  
DaRam Engineers, Inc.  
11000 Richmond Ave. Suite 300  
Houston, Texas 77042

Re: On-Going Services  
Drainage Review of 25 Windermere – **New Pool, First Revision, Third Submittal**  
Piney Point Village, Texas  
HDR Job No. 10361768

Dear Mr. Vergara:

We are in receipt of the proposed drainage plan for the above referenced address, with engineer seal dated 3/22/2023. Please make the following changes to the drainage plan:

1. Per City drainage criteria and our letters dated 2/22/23 and 3/15/23, the drainage system must include a clean-out, inlet, or junction box at every bend so as to provide access for maintenance; the only exception may be where roof drains tie into the main system. It appears there are several locations of proposed bends in the pipe that do not have a clean-out, inlet, or junction box **at the bend or on the upstream bend of a pair of bends in pipe**. Please revise the drainage plan to ensure this criterion is met.
2. Per City drainage criteria and our letters dated 2/22/23 and 3/15/23, all proposed drainage pipes shall be sloped to achieve a velocity of at least 3ft/sec. Based on flowline elevations, it appears that there are eight proposed pipes that are not adequately sloped to achieve a velocity of at least 3ft/sec. Please revise the drainage plan to ensure that all proposed pipes are sloped for a velocity of at least 3 ft/sec to ensure this criterion is met.
3. Per City drainage criteria and our letter dated 3/15/23, if storm sewer pipes are proposed in drainage plan, main pipes shall be minimum 6" PVC SDR 26. It appears that the 4-inch outfall pipes on the property are proposed to be Schedule 40. Please revise the drainage plan to ensure this criterion is met.
4. It appears that the proposed pool, spa, and deck cross section shows elevations that do not match the proposed pool, spa, and deck elevations shown on the drainage plan. Please verify the correct proposed elevations and revise the drainage plan so that the proposed elevations on the cross section match the elevations proposed on the drainage plan.

5. It appears that the “Proposed Curb Cut & Repair Detail @ Single Pipe Outfall” detail on the drainage plan shows two 4-inch pipes outfalling through the curb into the street while the drawing shows one location with three 4-inch pipes and another location with four 4-inch pipes outfalling into the street. Please revise the detail on the drainage plan to reflect the actual number of 4-inch pipes at each outfall location into the street.

**Please revise plans and resubmit as an electronic drainage submission by email to Annette Arriaga at [bldgofficial@pineypt.org](mailto:bldgofficial@pineypt.org).** A copy of the drainage plan with markups will be sent with this letter by the Building Official. If you have any questions, please feel free to contact the City.

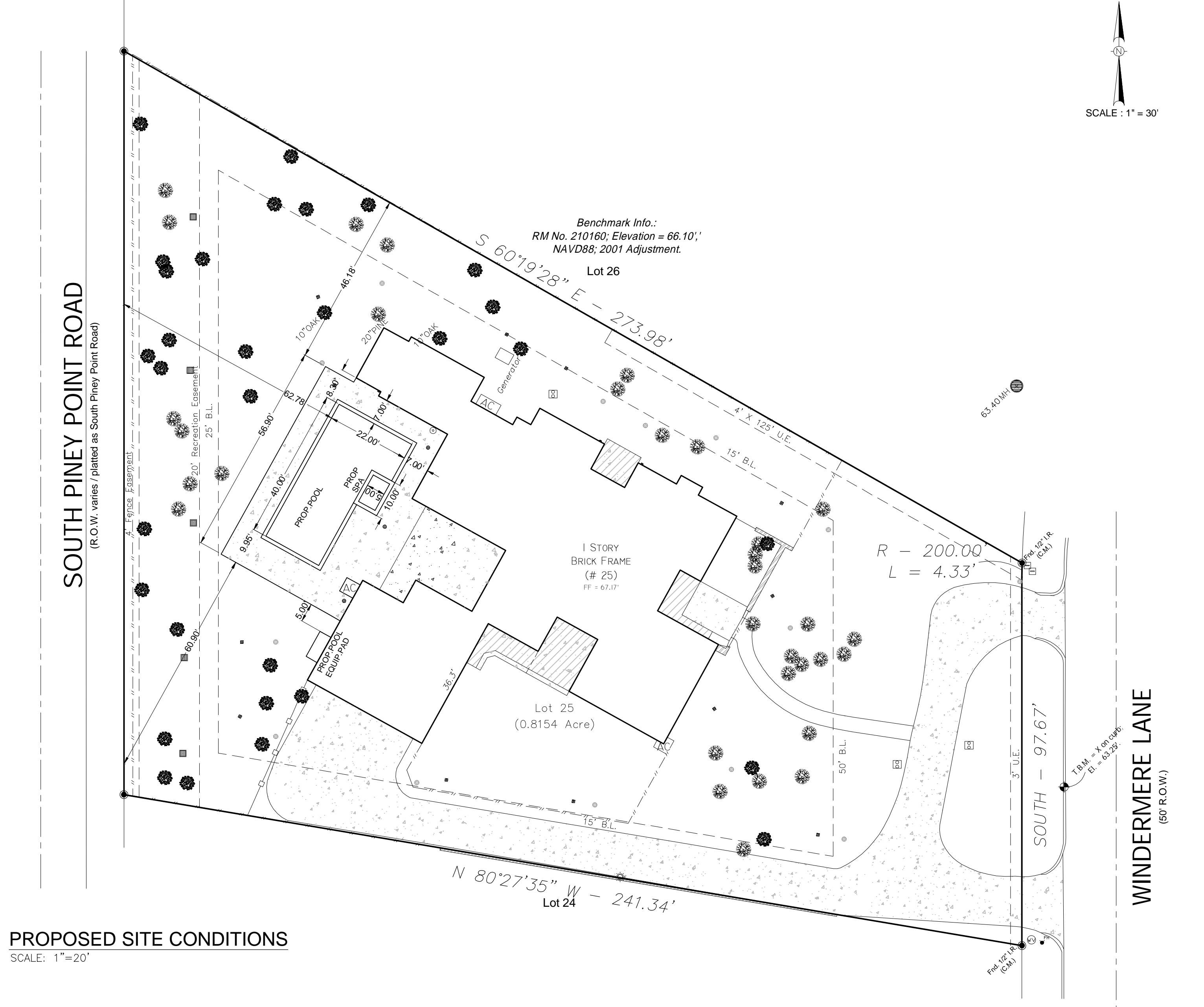
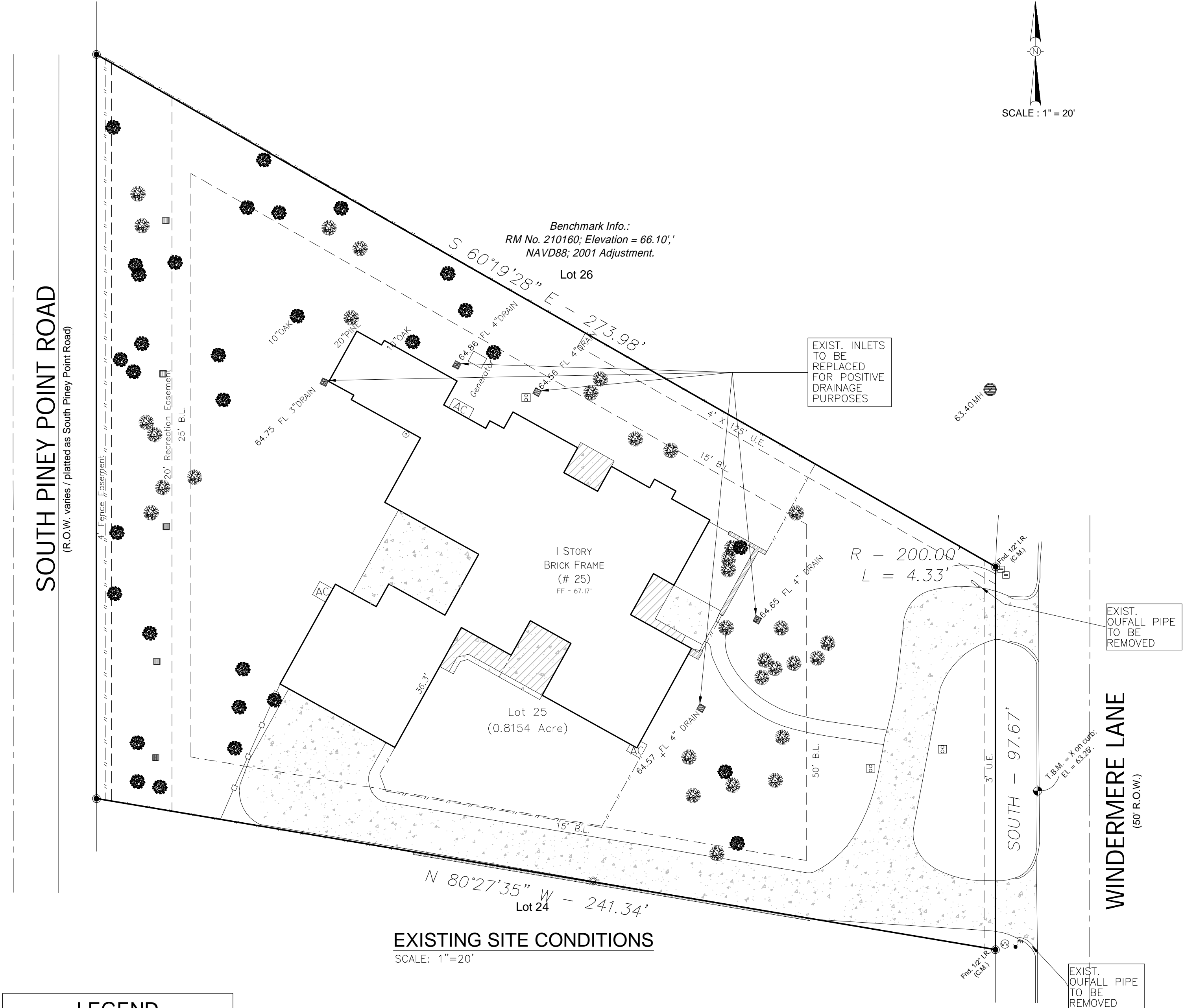
Sincerely,

HDR Engineering, Inc.

A handwritten signature in blue ink, appearing to read "Aaron Croley".

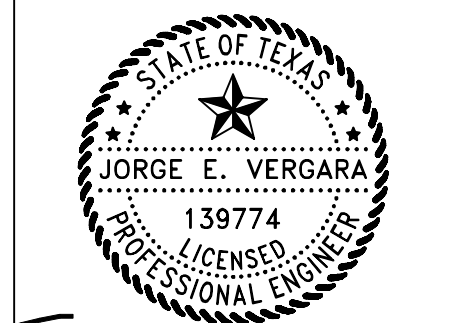
Aaron Croley, P.E., CFM  
Project Engineer

Cc: Annette Arriaga – City of Piney Point Village



PROPOSED POOL, SPA, & DECK  
AT  
25 WINDERMERE LN.  
HOUSTON, TEXAS 77063

PROFESSIONAL SEAL



03/22/23  
JORGE VERGARA FOR DARAM ENGINEERS

ISSUED / REVISED

NO.	DATE	DESCRIPTION	FH
1	09/06/22	CITY COMMENTS	FH
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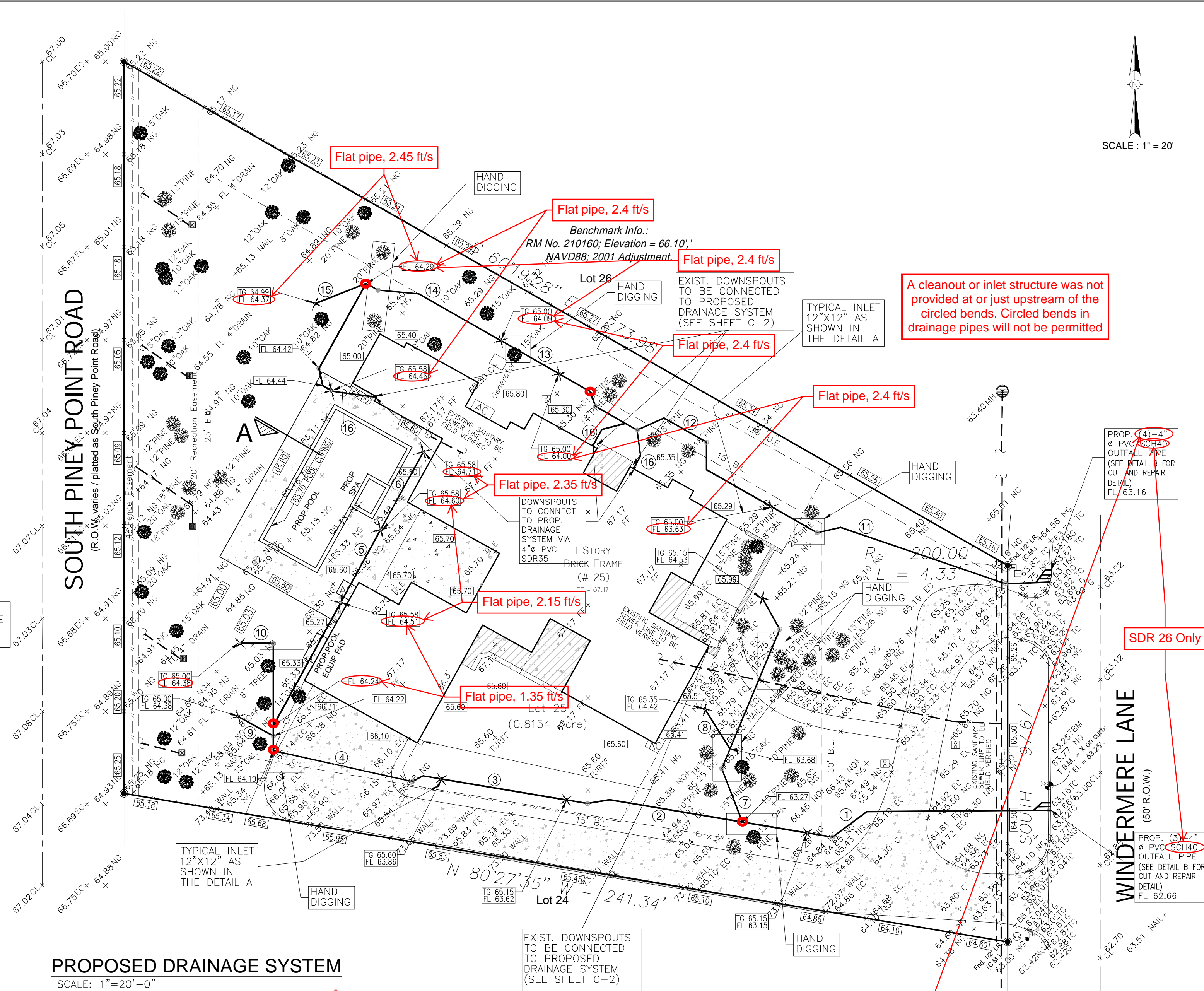
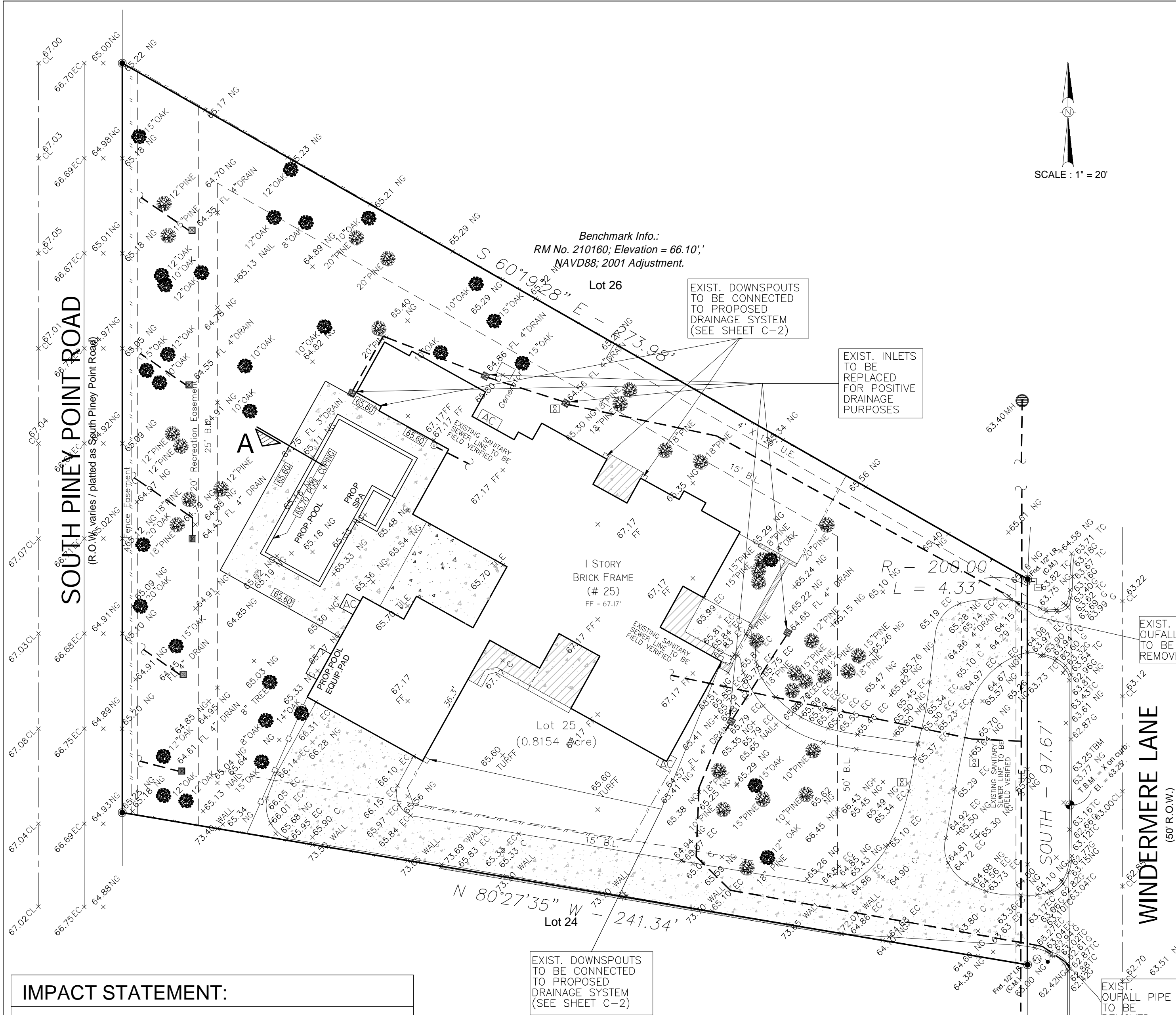
JOB NO:	22-373
CHECKED BY:	JV
DRAWN BY:	RM
DATE:	03/22/2023
SCALE:	AS SHOWN

DRAWING TITLE:  
SITE PLAN

DRAWING NO.

C-1





PROPOSED STORM DRAIN PIPE SCHEDULE	FLOW CAPACITY (CFS)	AVERAGE VELOCITY (FT/S)
1 68LF 6"Ø PVC SDR26 @ 0.72%	0.59	3.01
2 65LF 6"Ø PVC SDR26 @ 0.72%	0.59	3.01
3 34LF 6"Ø PVC SDR26 @ 0.72%	0.59	3.01
4 91LF 6"Ø PVC SDR26 @ 0.72%	0.59	3.01
5 22LF 6"Ø PVC SDR26 @ 0.45%	0.47	2.38
6 23LF 6"Ø PVC SDR26 @ 0.45%	0.47	2.38
7 66LF 6"Ø PVC SDR26 @ 1.92%	0.96	4.91
8 13LF 6"Ø PVC SDR26 @ 6.00%	1.70	8.68
9 11LF 6"Ø PVC SDR26 @ 1.50%	0.85	4.34
10 21LF 6"Ø PVC SDR26 @ 0.69%	0.58	2.94
11 80LF 6"Ø PVC SDR26 @ 0.60%	0.54	2.75
12 78LF 6"Ø PVC SDR26 @ 0.50%	0.49	2.51
13 18LF 6"Ø PVC SDR26 @ 0.50%	0.49	2.51
14 73LF 6"Ø PVC SDR26 @ 0.50%	0.49	2.51
15 15LF 6"Ø PVC SDR26 @ 0.50%	0.49	2.51
16 34LF 4"Ø PVC SDR26 @ 1.35%	0.29	3.30

EXISTING IMPERVIOUS AREA	
- EXIST. 2 STORY BRICK & FRAME WITH GARAGE	5,610.22 SF
- EXIST. FRONT PORCH	97.03 SF
- EXIST. SIDE PORCH (RIGHT AND LEFT)	386.52 SF
- EXIST. BRICK WALL AND CONCRETE PAD	71.63 SF
- EXIST. FRONT CONC. WALKWAY WITH CONCRETE PAD	378.48 SF
- EXIST. BACK PATIO CONCRETE PAD	494.84 SF
- EXIST. BACK PATIO CONCRETE PAD	781.73 SF
- EXIST. DRIVEWAY	4,282.48 SF
- EXIST. AC PADS & GENERATOR	45.99 SF
<b>- TOTAL EXISTING IMPERVIOUS AREA</b>	<b>12,148.92 SF</b>
	<b>0.279 ACRES</b>

PROPOSED IMPERVIOUS AREA	
- PROP. POOL WATER SURFACE	706.00 SF
- PROP. POOL COPING	112.00 SF
- PROP. 18" RAISED SPA WATER SURFACE	46.00 SF
- PROP. 18" RAISED SPA WALL	24.00 SF
- PROP. POOL EQUIPMENT	25.08 SF
- PROP. DECK	1,608.00 SF
<b>- TOTAL PROPOSED INCREASE IN IMPERVIOUS AREA</b>	<b>2,546 SF</b>
	<b>0.058 ACRES</b>

DRAINAGE CALCULATIONS:	
<b>2-YEAR RAIN FALL EVENT:</b>	
LOT AREA = A = 0.815 ACRES (35,518.00 SF)	
TIME OF CONCENTRATION: TC = 10A <sup>0.1781</sup> + 15 = 24.65 Min.	
INTENSITY FOR 2 YEAR RAINFALL FREQUENCY: I <sub>VR</sub> = $\frac{b}{(d+TC)^e}$ = 3.781 in/hr	
b = 48.35 d = 9.07 e = 0.7244	
<b>ALLOWABLE FLOW RATE Q:</b>	
Q = CIA = 0.40 x 3.78 x 0.8154 = 1.233 CFS	
<b>EXISTING DRAINAGE CONDITIONS:</b>	
EXISTING IMPERVIOUS AREA = 0.279 ACRES	
IMPERVIOUS AREA / TOTAL AREA: $\frac{I_a}{I_t} = \frac{0.279}{0.8154} = 0.342$ (34.20%)	
RUN OFF COEFFICIENT: C = 0.61a + 0.2 = 0.6 x 0.342 + 0.2 = 0.405	
MINIMUM ALLOWED AND CONSIDERED: 0.40	
<b>EXISTING FLOW RATE Q:</b>	
Q = CIA = 0.405 x 3.781 x 0.8154 = 1.249 CFS	
<b>PROPOSED DRAINAGE CONDITIONS:</b>	
TOTAL IMPERVIOUS AREA (PROP. + EXISTING) = 0.337 ACRES (14,695.08 SF)	
IMPERVIOUS AREA / TOTAL AREA: $\frac{I_a}{I_t} = \frac{0.337}{0.8154} = 0.414$ (41.37%)	
RUN OFF COEFFICIENT: C = 0.61a + 0.2 = 0.6 x 0.414 + 0.2 = 0.448	
MINIMUM ALLOWED AND CONSIDERED: 0.40	
<b>PROPOSED FLOW RATE Q:</b>	
Q = CIA = 0.448 x 3.781 x 0.8154 = 1.382 CFS	

CALCULATION OF IMPERVIOUS PERCENTAGE	
- FINAL IMPERVIOUS AREA (EXISTING + PROPOSED) =	14,695 SF
- TOTAL AREA OF LOT =	35,518 SF
- FINAL PERCENTAGE OF IMPERVIOUS AREA =	41.37 %

DRAIN CLEANOUT NOTE:	
DRAINAGE CLEANOUT MUST BE INSTALLED UPSTREAM OF EVERY PAIR OF BENDS	

12" NDS CATCH BASIN SERIES					
PART NO.	DESCRIPTION	COLOR	Pkg Qty.	Wt. (lbs.)	Product Class
1200	12"x12" CATCH BASIN, 2 OPENINGS	BLACK	4	4.25	10ND
1204	12"x12" CATCH BASIN, 4 OPENINGS	BLACK	4	3.75	10ND

PROFESSIONAL SEAL

STATE OF TEXAS

JORGE E. VERGARA

139774

03/22/23

JORGE VERGARA FOR DARAM ENGINEERS

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DRAINAGE PLAN	
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DRAINAGE PLAN	
DRAWING NO.	
C-2	

11000 RICHMOND AVE., SUITE 300  
HOUSTON, TEXAS 77042  
(713)528-1552 PH.  
(713)583-5028 FAX  
EMAIL: info@daramengineers.com

**Daram Engineers, Inc.**

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TEXAS FIRM REGISTRATION NUMBER F-9503

PROPOSED POOL, SPA, & DECK  
AT  
25 WINDERMERE LN.  
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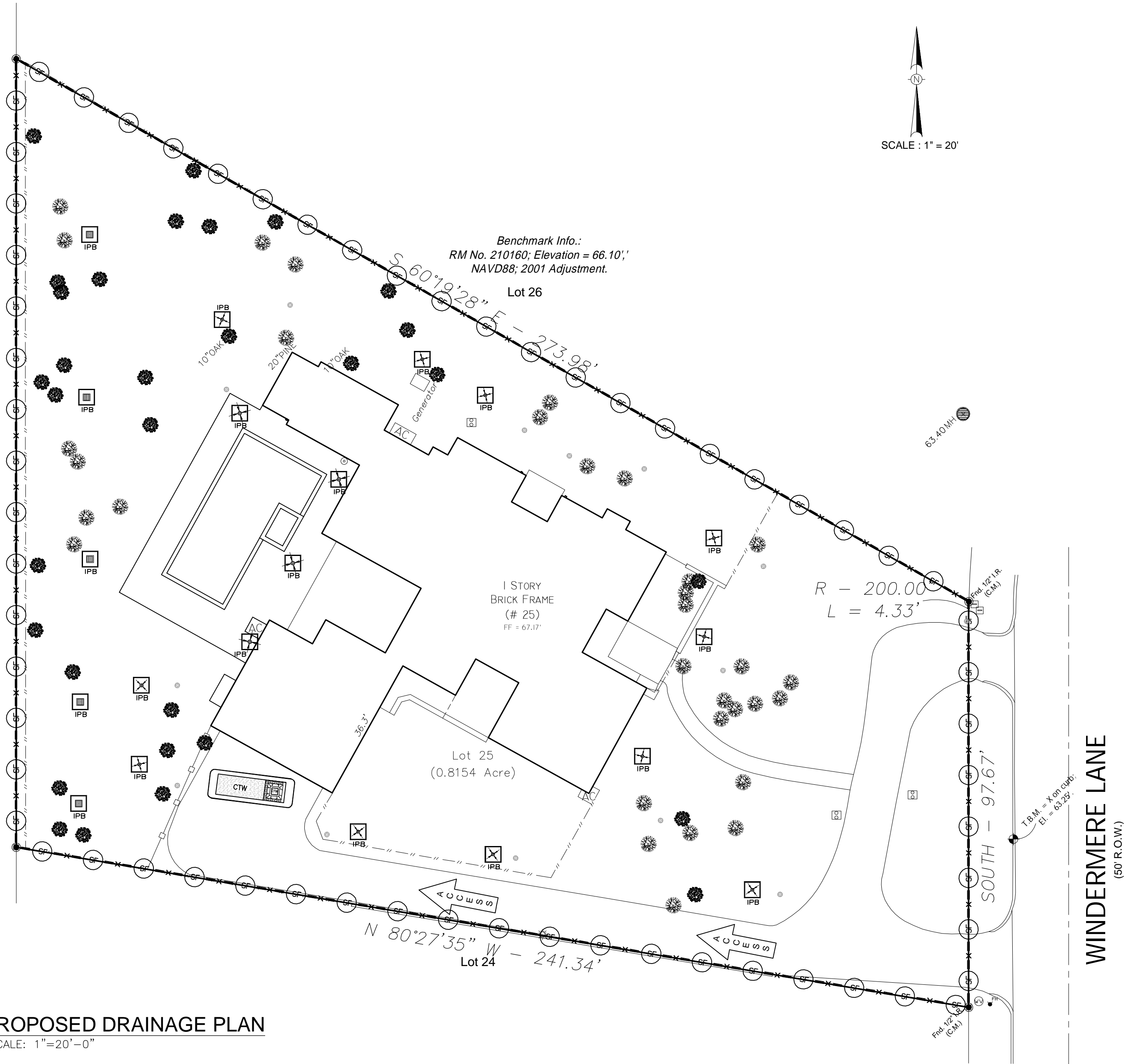


SOUTH PINEY POINT ROAD

(R.O.W. varies / platted as South Piney Point Road)

PROPOSED DRAINAGE PLAN

SCALE: 1"=20'-0"



LEGEND:

- × — (SF) — × — SILT FENCE
- IPB
- CTW CONCRETE TRUCK WASHOUT AREA

GROUND ELEVATIONS NOTES:

NO GROUND ELEVATIONS CHANGES SHALL OCCUR AROUND THE PERIMETER OF THE PROPERTY. EXISTING GROUND ELEVATIONS, AROUND THE PERIMETER OF THE PROPERTY, ARE TO REMAIN UNCHANGED DURING AND AFTER CONSTRUCTION.

TREES' DRIP-LINE NOTE

ANY EXCAVATION IN THE DRIP-LINE OF TREES 20 INCHES IN DIAMETER AND ABOVE MUST BE COMPLETED BY HAND DIGGING. NO ROOTS LARGER THAN 1 INCH IN DIAMETER ARE PERMITTED TO BE CUT FOR CONSTRUCTION OF THE DRAINAGE SYSTEM.

\* TEMPORARY DRAINAGE: CONTRACTOR TO PROVIDE SUMP PUMP DURING POOL CAVITY EXCAVATION AND DRAIN THROUGH EXISTING INLET.

EROSION CONTROL SYSTEM NOTES

THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SILT FENCES TO PREVENT EROSION FROM REACHING ADJACENT PROPERTY.

IN THE EVENT THE PREVENTION MEASURES ARE NOT EFFECTIVE, THE CONTRACTOR SHALL REMOVE ANY EROSION DEBRIS AND RESTORE ADJACENT PROPERTY AND/OR RIGHT-OF-WAY TO ORIGINAL OR BETTER CONDITION.

EROSION CONTROL FEATURES SHOWN ARE THE MINIMUM REQUIREMENTS ACCEPTABLE. PLACE ADDITIONAL EROSION CONTROL DEVICES AS RUNOFF AND DRAINAGE PATTERNS CHANGE DURING CONSTRUCTION TO PROHIBIT LOST OF SOIL FROM THE SITE.

MINIMIZE THE AMOUNT OF SURFACE AREA EXPOSED TO THE EXTENT PRACTICABLE.

LEAVE GRADED AREAS WITH A ROUGH TEXTURE TO PROMOTE INFILTRATION. LIMIT UNNECESSARY TRAFFIC ON GRADED AREAS.

INSTALL SILT FENCES IN DOWNSTREAM SLOPES FOR THE EXTENT OF THE CONSTRUCTION LIMITS PRIOR TO BAGGING ANY GRADING OPERATIONS.

SILT FENCES:

A- INSTALL SILT FENCES AT LOCATIONS SHOWN GENERALLY ALONG THE CONTOUR OF DOWNSTREAM SLOPES.

B- INSTALL POST-ANGLING SLIGHTLY UPSTREAM. USE WIRE FENCE AND SPACE POST AT 10' TO SUPPORT FABRIC.

C- EXCAVATE 4" x 4" TRENCH ON UPSTREAM SITE, EMBED FABRIC 8", BACKFILL TRENCH AND COMPACT.

D- FASTEN FABRIC AND WIRE FENCE SECURELY TO POSTS.

E- REINFORCED FILTER FABRIC FENCES MAY NOT BE TAKEN DOWN UNTIL THE BUILDER RECEIVES APPROVAL FROM THE CITY.

MAINTAIN EROSION CONTROL DEVICES IN GOOD CONDITION AT ALL TIMES. INSPECT FREQUENTLY AND AFTER EACH RAINFALL.

REDISTRIBUTE ACCUMULATED SEDIMENT UPSTREAM OF DEVICES.

REMOVE EROSION CONTROL DEVICES WHEN NO LONGER NEEDED.

PROPERLY DISPOSE OF SOLID WASTE, PAINTS, SOLVENTS, CLEANING COMPOUNDS, ETC.

STORE CONSTRUCTION MATERIAL AWAY FROM LOW AREAS AND DRAINAGE WAYS.

PROVIDE PORTABLE TOILETS AND PROPERLY DISPOSE OF SANITARY SEWAGE. PROVIDE MINIMUM TWO ADJACENT TO TEMPORARY CONSTRUCTION TRAILER.

LOCATE FUEL/MATERIAL STORAGE AREAS AWAY FROM STORM WATER CONVEYANCE SYSTEMS. USE A LINER UNDER ABOVE GROUND STORAGE TANKS. USE SILT FENCING AROUND FUEL STORAGE AREAS. (NO SEPARATE PAY).

CONTRACTOR WILL ADVISE OWNER IMMEDIATELY, VERBALLY, AND IN WRITING, OF ANY FUEL SPILLS ONTO THE PROJECT/CONSTRUCTION AREAS AND THE ACTION TAKEN TO REMEDY THE PROBLEM.

CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL ENVIRONMENTAL LOSS.

CONTRACTOR IS RESPONSIBLE FOR DISPOSING FUELS, MATERIALS, AND EXCAVATIONS IN A LEGALLY APPROVED MANNER.

CONTRACTOR IS TO INSPECT ALL STRUCTURAL CONTROLS SPECIFIED HEREIN, AT A MINIMUM, ONCE EVERY SEVEN CALENDAR DAYS OR BETWEEN 24 HOURS AFTER EVERY STORM EVENT THAT MEETS OR EXCEEDS 0.3 INCHES/24 HOUR PERIOD.

CONTRACTOR WILL PROVIDE STORAGE AREAS FOR CHEMICAL, PAINTS, SOLVENTS, FERTILIZERS, AND ANY POTENTIALLY TOXIC MATERIAL.

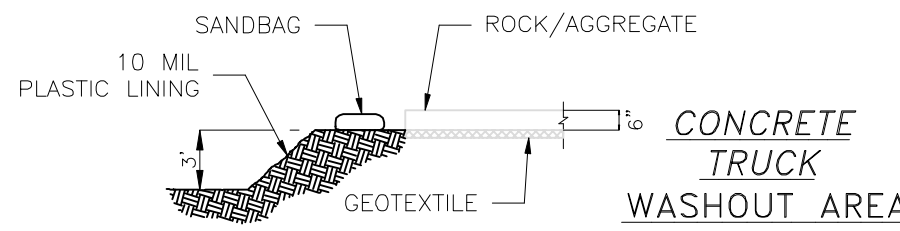
FILTER FABRIC (SILT FENCE) FLOW RATE WILL BE 30 GALLON PER SQUARE FOOT PER MINUTE.

FILTER FABRIC WILL BE STAPLED OVER BOARDS ON ALL STAGE ONE STORM SEWER INLETS.

PROTECT ALL DESIGNATED SPECIMEN TREES WITH PROTECTIVE FENCING.

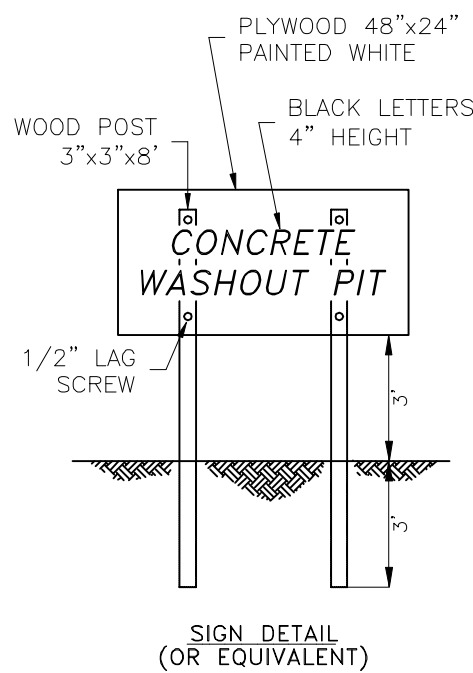
TEMPORARY DRAINAGE NOTES

- ANY AREAS OF GRASS WITHIN THE CITY'S RIGHT OF WAY WHICH ARE DISTURBED OR DUG UP DURING CONSTRUCTION SHALL BE REPLACED WITH ST. AUGUSTINE OR GRASS WHICH MATCHES THE GRASS REMOVED.
- ANY DAMAGE TO EXISTING ROADS, DRIVEWAYS, SIDEWALKS, OR OTHER APPURTENANCES WITHIN THE CITY'S RIGHT OF WAY SHALL BE SAW CUT, REMOVED AND REPLACED WITH MATERIAL EQUAL TO OR SUPERIOR TO EXISTING MATERIAL, AND BE INSTALLED IN A MANNER ACCEPTABLE TO THE CITY.
- THE CONTRACTOR SHALL MAINTAIN DRAINAGE DURING CONSTRUCTION AS TO NOT ADVERSELY IMPACT ADJACENT / NEIGHBORING PROPERTIES DURING A HARRIS COUNTY REGION 2 2-YEAR STORM EVENT USING ATLAS 14 RAINFALL DATA.
- REINFORCED FILTER-FABRIC FENCES MAY NOT BE TAKEN DOWN UNTIL THE BUILDER RECEIVES APPROVAL FROM THE CITY.



GENERAL NOTES:

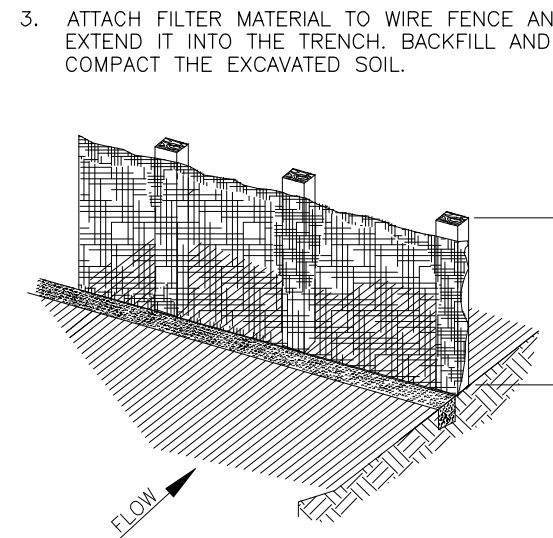
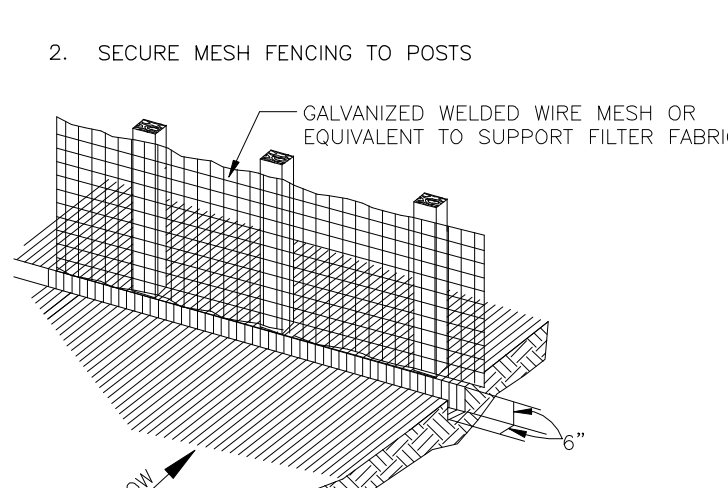
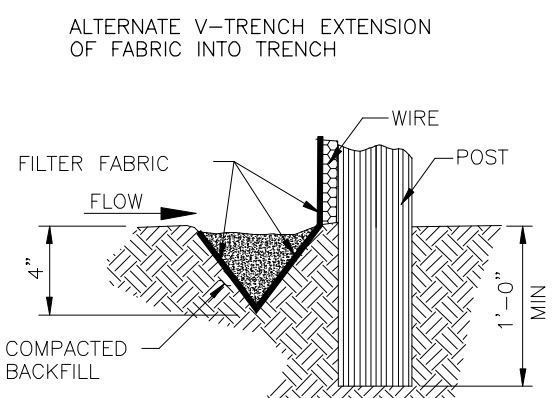
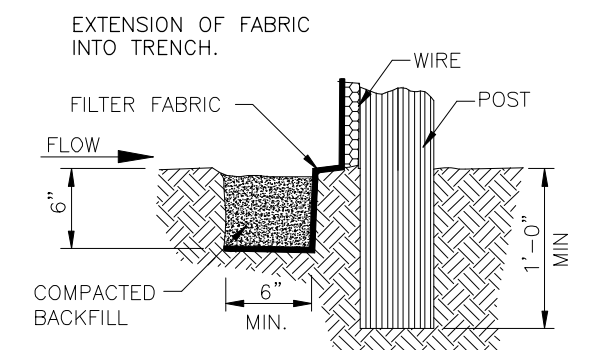
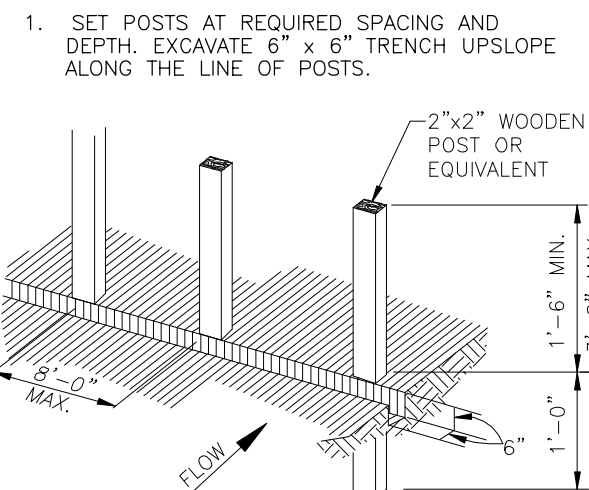
- POST A SIGN READING "CONCRETE WASHOUT PIT"
- VERBALLY INSTRUCT THE CONCRETE TRUCK DRIVERS WHERE THE PIT IS AND TO WASHOUT THEIR TRUCKS IN THE PIT AND NOWHERE ELSE.
- UPON THE CONCRETE SETTING UP (CURING, DRYING OUT), THE CONCRETE WASTE SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED OF PROPERLY BY THE CONTRACTOR. AFTER REMOVAL OF THE CONCRETE WASTE, THE WASHOUT PIT SHALL BE FILLED WITH CLEAN FILL MATERIAL AND COMPACTED TO IN-SITU CONDITIONS, OR AS DIRECTED BY THE PROJECT SPECIFICATIONS.
- CONCRETE WASHOUT PITS SHALL NOT BE LOCATED DIRECTLY ADJACENT TO, NOR AT ANY TIME DRAIN INTO THE STORM SEWER SYSTEM OR ANY OTHER SWALE, DITCH, OR WATERWAY.
- CONSTRUCT ENTRY ROAD AND BOTTOM OF WASHOUT AREA TO SUPPORT EXPECTED LOADINGS FROM TRUCKS EQUIPMENT.



CONCRETE TRUCK WASHOUT (CTW) AREA

SCALE: N.T.S

EXCAVATION ACCESS



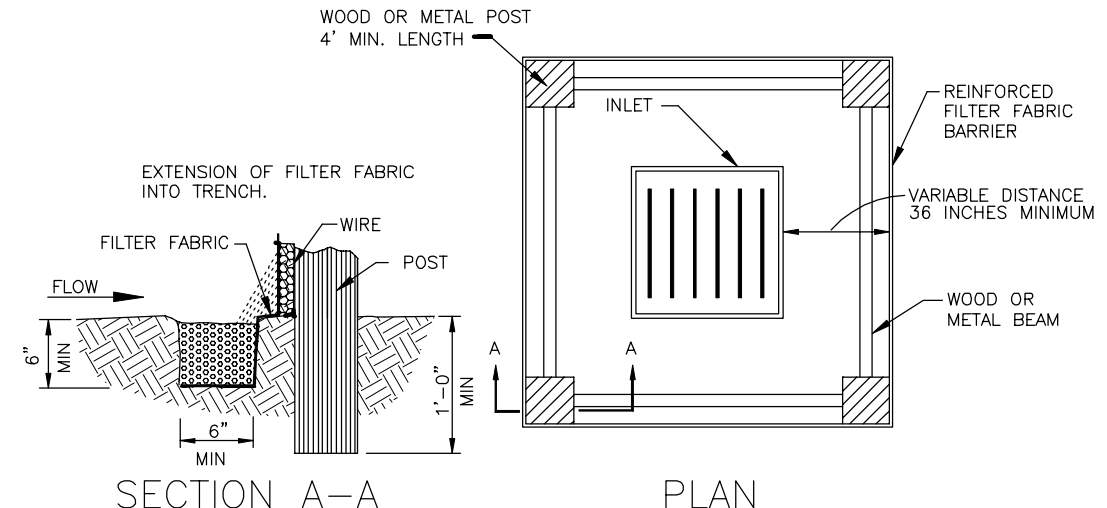
GENERAL NOTES:

- SECURELY FASTEN MESH FENCING TO POSTS WITH STAPLES OR TIE WIRES.
- SECURELY FASTEN FILTER FABRIC TO MESH FENCING.
- WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT A POST, FOLD TOGETHER, AND ATTACH TO A POST.
- REMOVE SEDIMENT DEPOSITS WHEN SILT REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE IN DEPTH.

REINFORCED FILTER FABRIC BARRIER

S.W.P.P.P. DETAILS

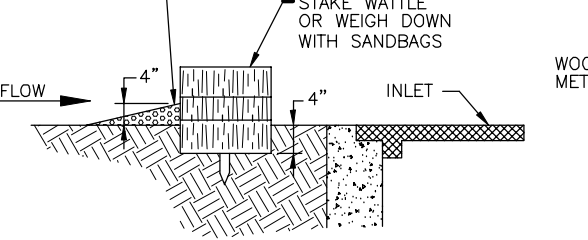
SCALE: 1"=20'-0"



SECTION A-A

- SEE REINFORCED FILTER FABRIC BARRIER DETAIL.
- MAXIMUM POST SPACING OF 4 FEET.

SECTION A-A



SECTION A-A

NOTE: MAY BALES ARE NOT ALLOWED FOR INLET PROTECTION BARRIERS.

INLET PROTECTION BARRIERS FOR STAGE 1 INLETS

11000 RICHMOND AVE., SUITE 300  
HOUSTON, TEXAS 77042  
(713)528-1552 PH.  
(713)583-5028 FAX  
EMAIL: info@darameengineers.com

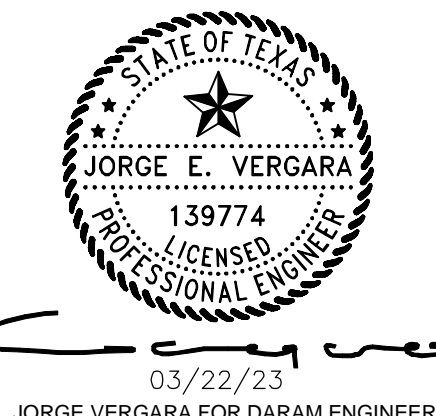
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TEXAS FIRM REGISTRATION NUMBER F-9503

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SWPPP

DRAWING NO.

C-3