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PORT OF OAKLAND

Alameda County
JUL 21 2005
Environmental Health

July 19, 2005

Mr. Barney Chan
Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

RE: Status Update and Submittal of "As-Built" - Soil Gas Venting System and New Free Product Removal System - 2225 and 2277 Seventh Street, Oakland, California

Dear Mr. Chan:

20187 2010

This letter provides a status update and final "as-built" drawings of the soil gas venting system and new free-product recovery system at the Port of Oakland (Port) 2225 and 2277 Seventh Street site (site). This site is the location of the new Harbor Facilities Center (HFC), previously known as the Port Field Support Services Complex (PFSSC). This letter follows up on my previous update letter to you dated May 25, 2004, and is being submitted in accordance with County requirements.

BACKGROUND

Several soil and groundwater investigations have been performed as a result of former underground storage tank releases of diesel and gasoline fuel. As a result of these fuel releases, separate phase petroleum hydrocarbon product has been identified floating on the groundwater table. Petroleum hydrocarbons, volatile organic compounds and methane in soil, soil gas and groundwater were also identified beneath the site. The Port's environmental consultant, Treadwell & Rollo, Inc., designed a soil-gas venting system to mitigate this risk beneath the building. A free product recovery system was also designed by Treadwell & Rollo to recover the product floating on the groundwater table beneath the site.

MITIGATION SYSTEM INSTALLATION STATUS AND FUTURE TASKS

The following provides a status update of the installation of the two mitigation systems.

Soil Gas Venting System

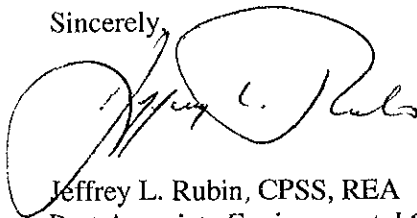
Overaa Construction (Overaa) installed the entire soil gas-venting system beneath the new building slab, including the attached riser pipes and wind turbines at roof level. The system was completed in early 2005 and initial testing was performed in April 2005. Final "as built" drawings and an operation and maintenance manual have been prepared for the soil gas venting system. The final "as built" drawings are enclosed.

July 19, 2005

Free Product Recovery System Installation

Beliveau Engineering Contractors, Inc. constructed the free product recovery system under contract with Overaa and Dillard Environmental Services. The system was completed in November 2004 and initial testing and calibration began during December 2004. The system is currently fully operational and free product is being removed from the surface of shallow groundwater. Further testing and calibration of the system will continue for a full year through the end of 2005 accounting for seasonal variations. Final "as built" drawings and an operation and maintenance manual have been prepared for the free product recovery system. The final "as built" drawings are enclosed. If you have any questions, please call me at (510) 627-1134.

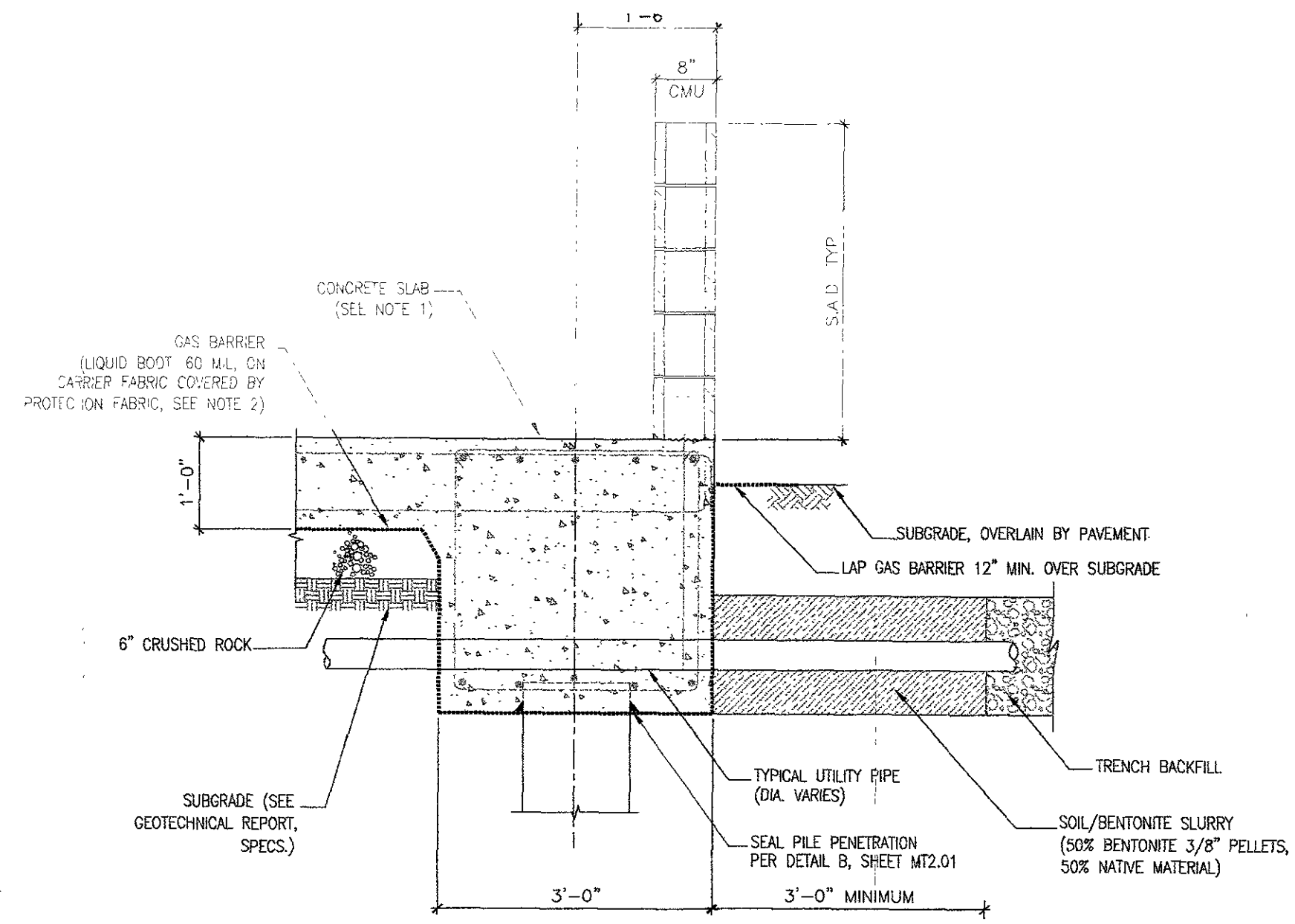
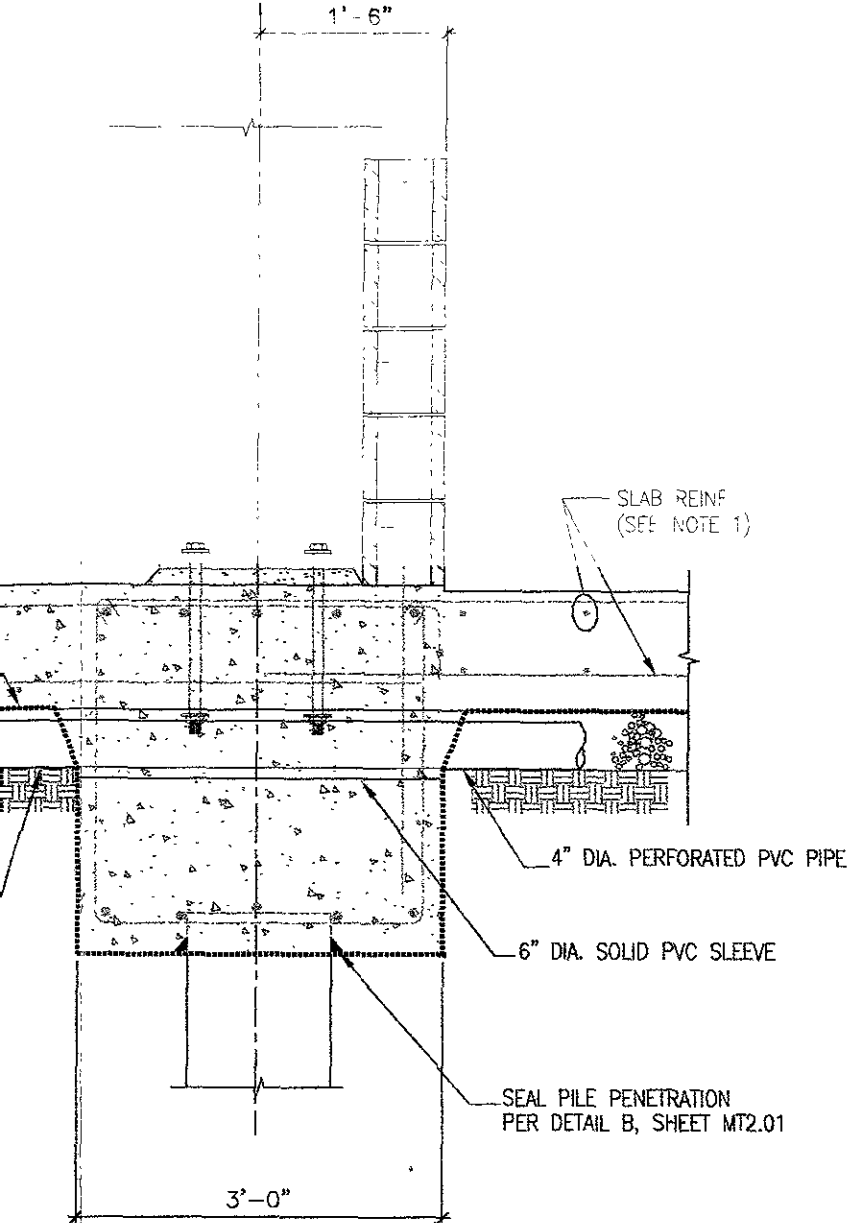
Sincerely,



Jeffrey L. Rubin, CPSS, REA
Port Associate Environmental Scientist
Environment and Safety Department

Cc (w/encl.): Cherie McCaulou, Regional Water Quality Control Board
Rachel Hess, Innovative Technical Solutions, Inc.
Chris Alger, Iris Environmental
Glenn Leong, Treadwell & Rollo, Inc.
Michele Heffes, Port Legal Department
Mikhail Korsunsky, Port Engineering Department

Cc (w/o encl.): Jeff Ludlow, Treadwell & Rollo, Inc.
Jeff Jones, Port Environment and Safety Department
Roberta Reinstein, Port Environment and Safety Department



SEAL PILE PENETRATION THROUGH INTERIOR GRADE BEAM
SCALE: 1" = 1'-0"

1 TYPICAL UTILITY TRENCH CUTOFF @ PERIMETER GRADE BEAM
SCALE: 1" = 1'-0"

DATE	APP'D	DRAWN	GEL
05		DESIGNED	BKM
		CHECKED	BKM
		REVIEWED	BKM

REVIEWED _____ FACILITIES DEPARTMENT

REVIEWED _____ CONSTRUCTION DEPARTMENT

REVIEWED _____ PROJECT PLANNING DEPARTMENT

REG. ENGINEER NO. _____

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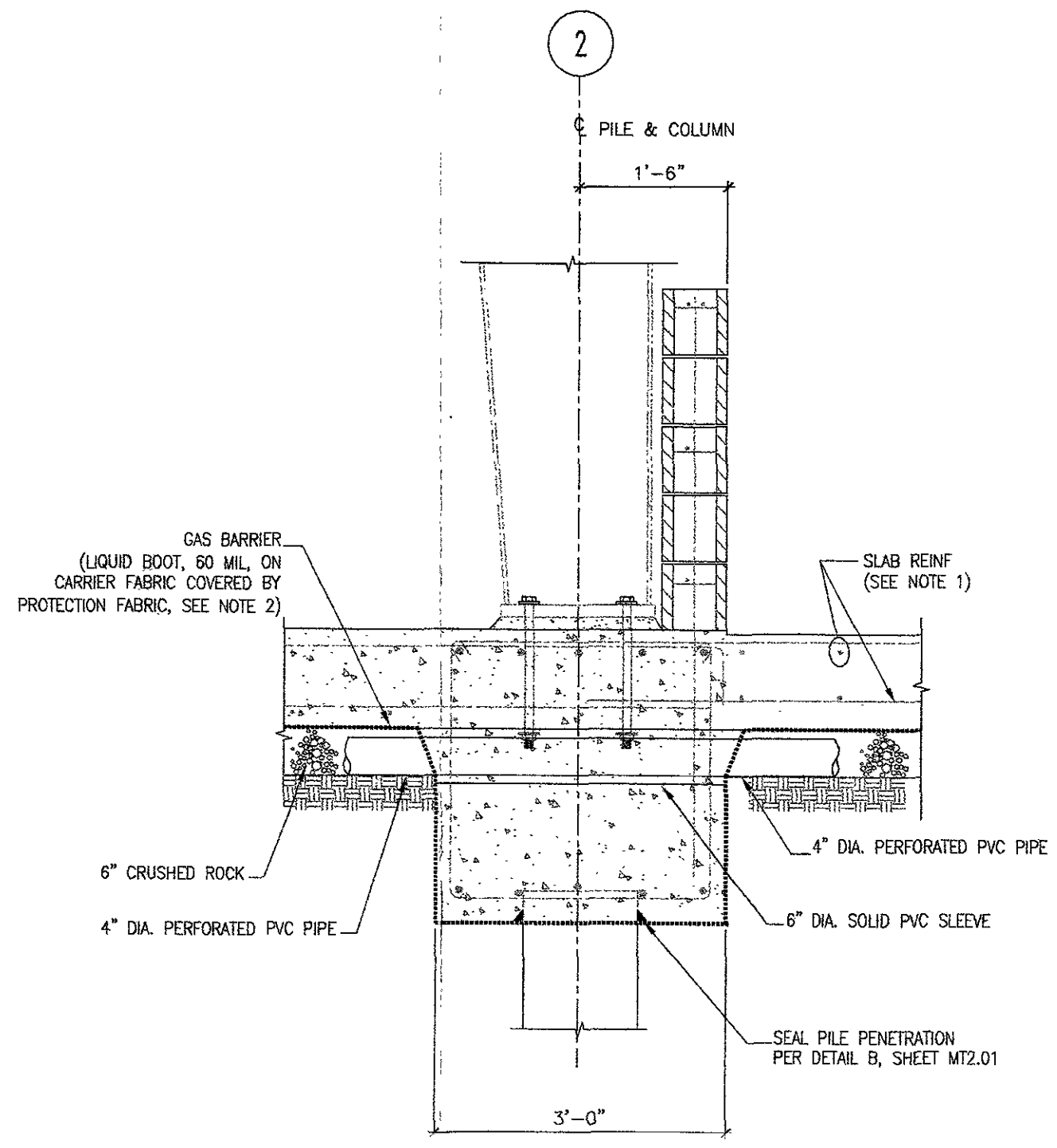
PORT OF OAKLAND

530 WATER ST. OAKLAND, CALIFORNIA

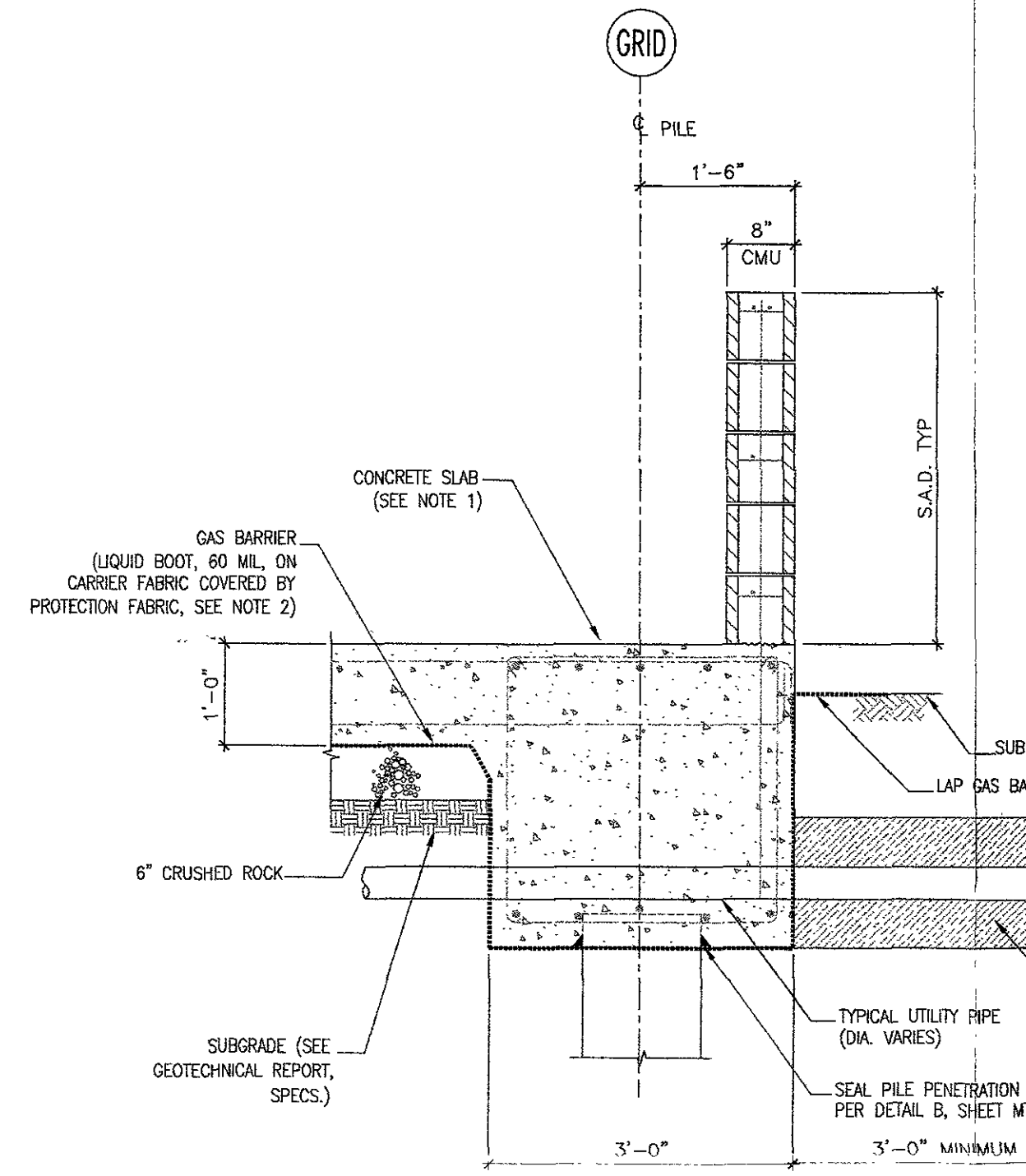
SEE SET FOR SIGNATURES

CHIEF ENGINEER	SEE SET FOR SIGNATURES
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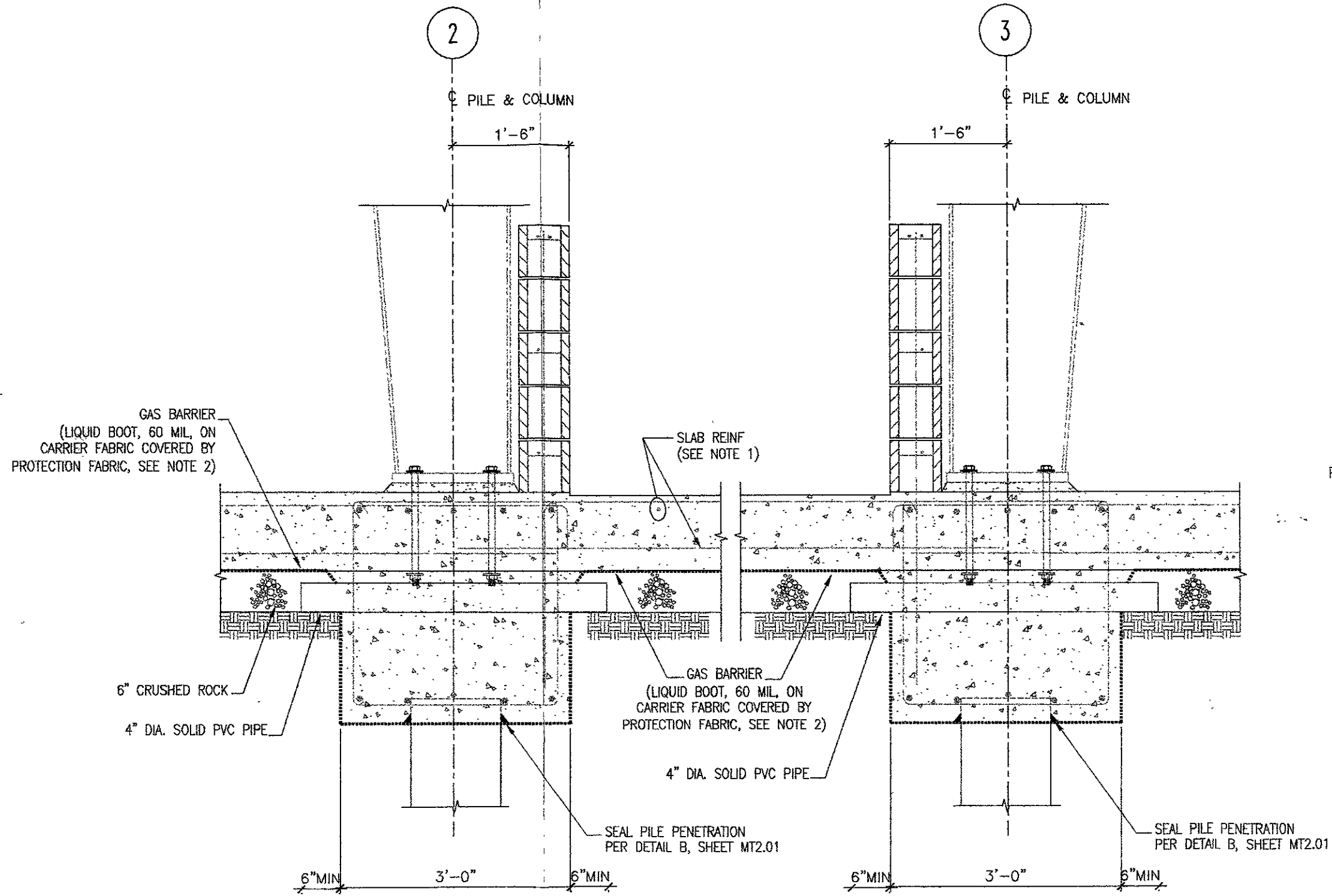
 <p>Michael Willis Architects 471 Ninth Street Oakland, CA 94607 tel: (510) 287-9710</p>	
<p>Treadwell & Rollo Environmental and Geotechnical Consultants 555 Montgomery Street, Suite 1300 San Francisco, California</p>	
<p>MARITIME & 7TH STREET SITE</p>	
<p>HARBOR FACILITIES CENTER</p>	
<p>SOIL GAS MITIGATION SYSTEM - DETAILS</p>	
DATE: 07/13/05	SCALE:
SHEET: 22	OF 203 SHEETS
MT2.03	AA-3827



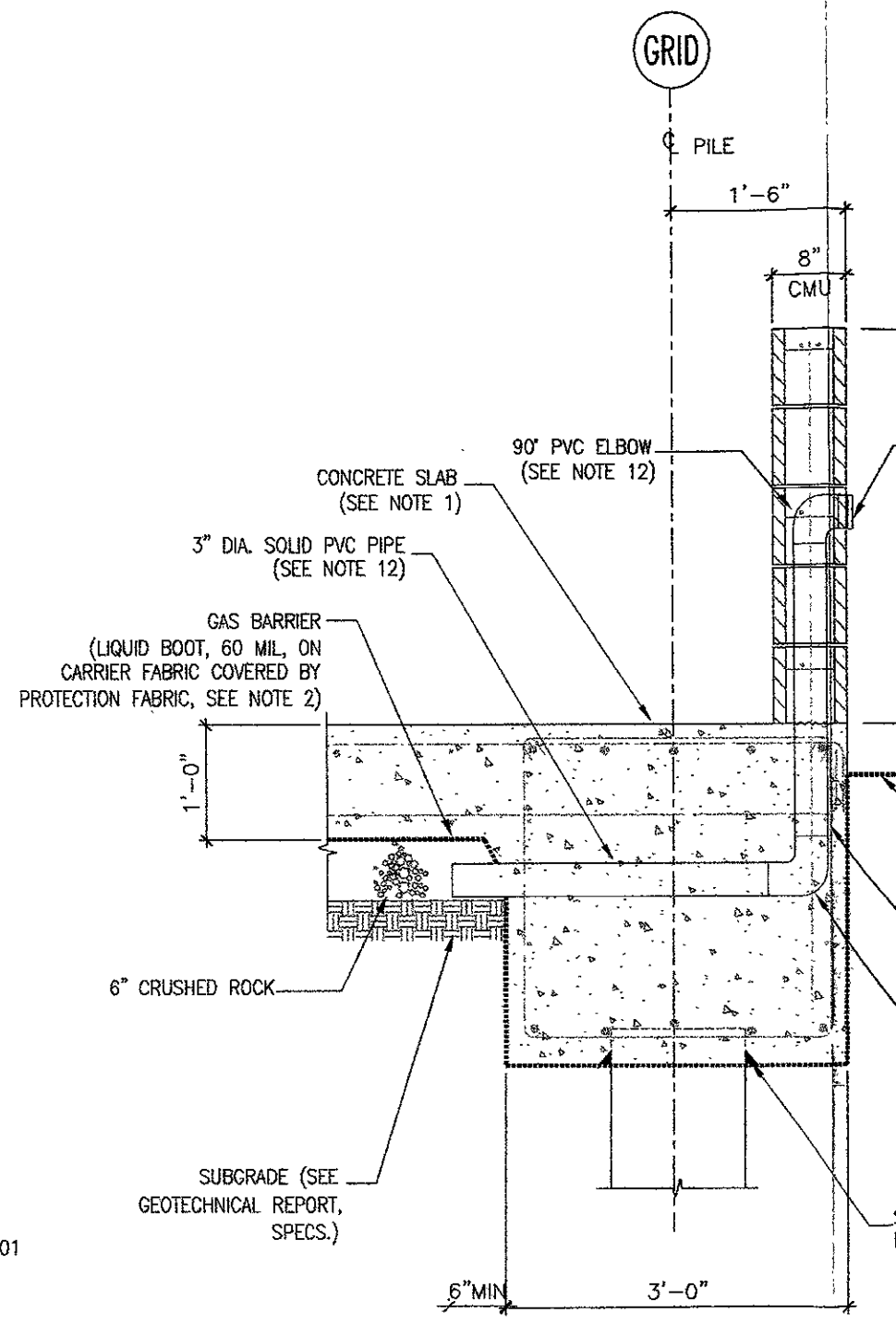
PIPING PENETRATION THROUGH INTERIOR GRADE BEAM
SCALE 1" = 1'-0"



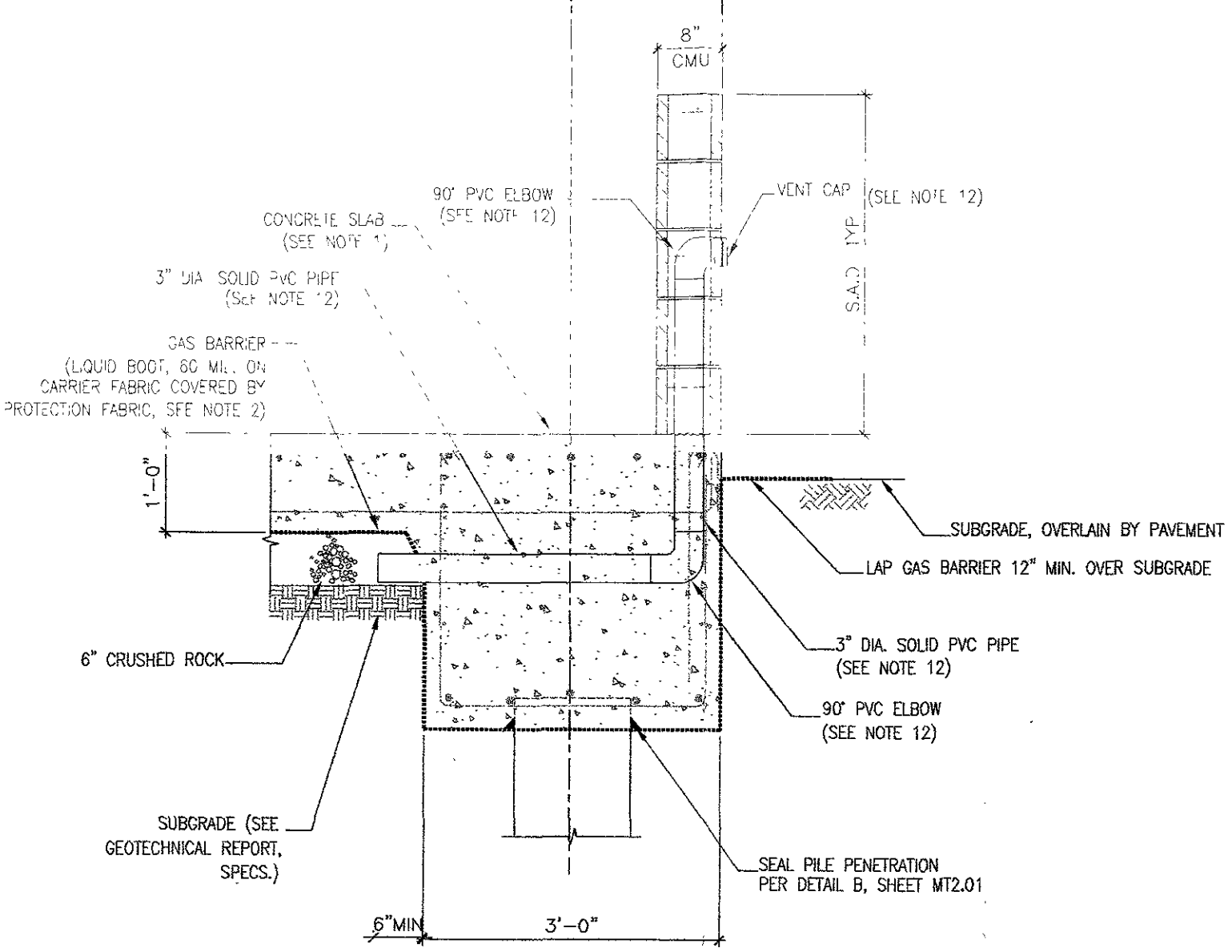
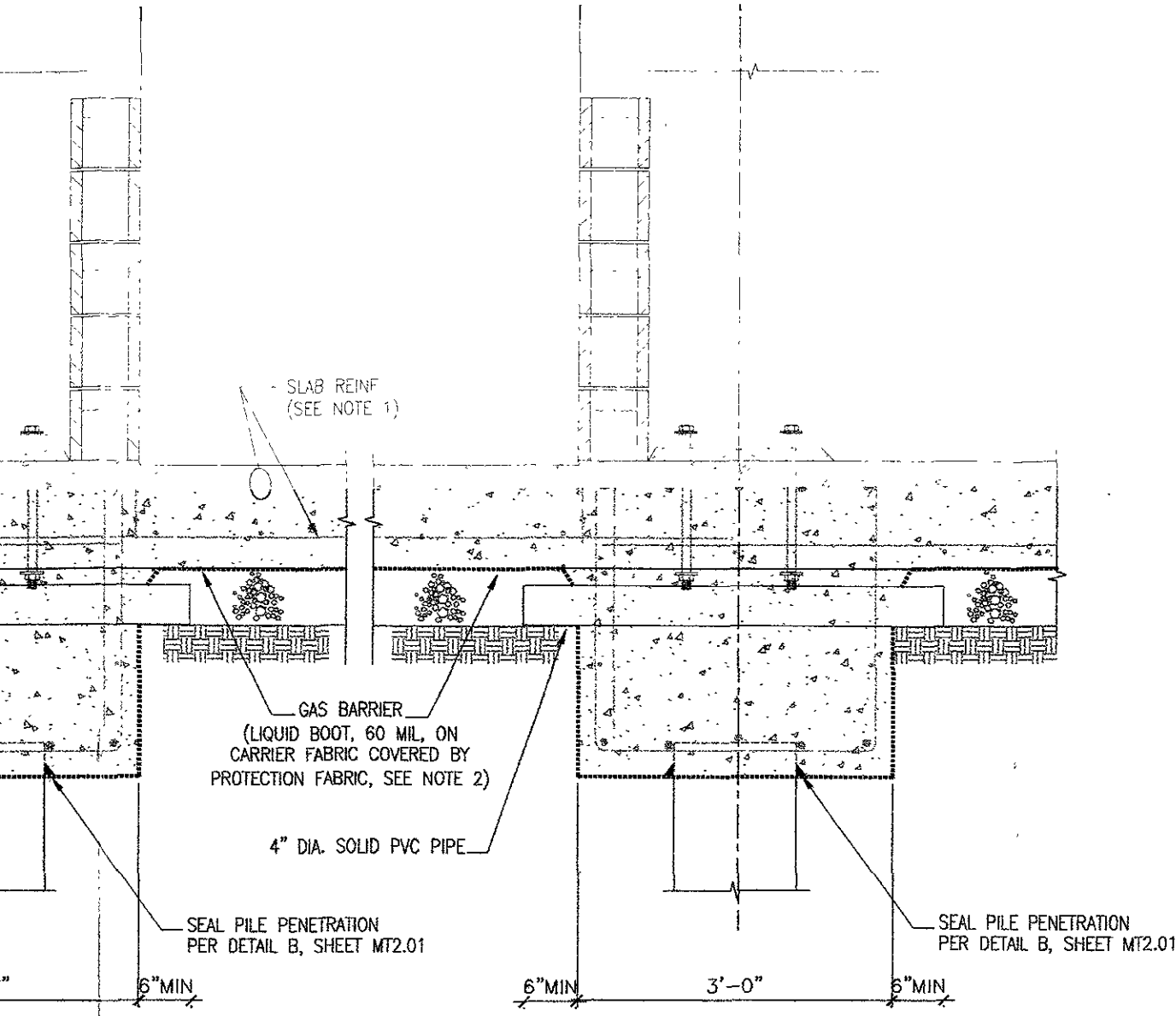
TYPICAL UTILITY TRENCH CUTOFF @ PERIMETER GRADE BE
SCALE 1" = 1'-0"



F INTERIOR VENT THROUGH INTERIOR GRADE BEAM
SCALE 1" = 1'-0"



C EXTERIOR VENT THROUGH PERIMETER GRADE
SCALE 1" = 1'-0"



F INTERIOR VENT THROUGH INTERIOR GRADE BEAM
SCALE: 1" = 1'-0"

G EXTERIOR VENT THROUGH PERIMETER GRADE BEAM
SCALE: 1" = 1'-0"

DATE	APP'D	REVIEWED	DRAWN
/05		FACILITIES DEPARTMENT	GEL
		CONSTRUCTION DEPARTMENT	BKM
		PROJECT PLANNING DEPARTMENT	BKM

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CHIEF ENGINEER	SEE CONFORMED SET FOR SIGNATURES
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RECOMMENDED	REG. ENGINEER NO.

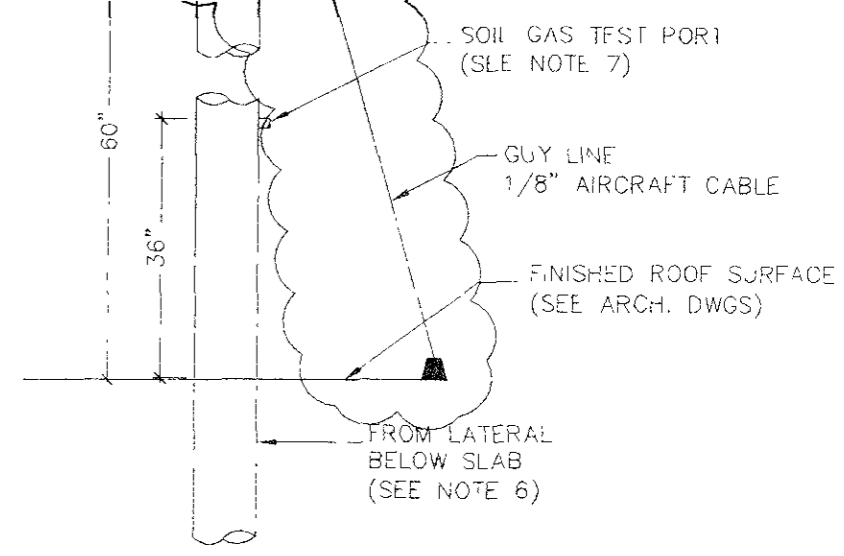
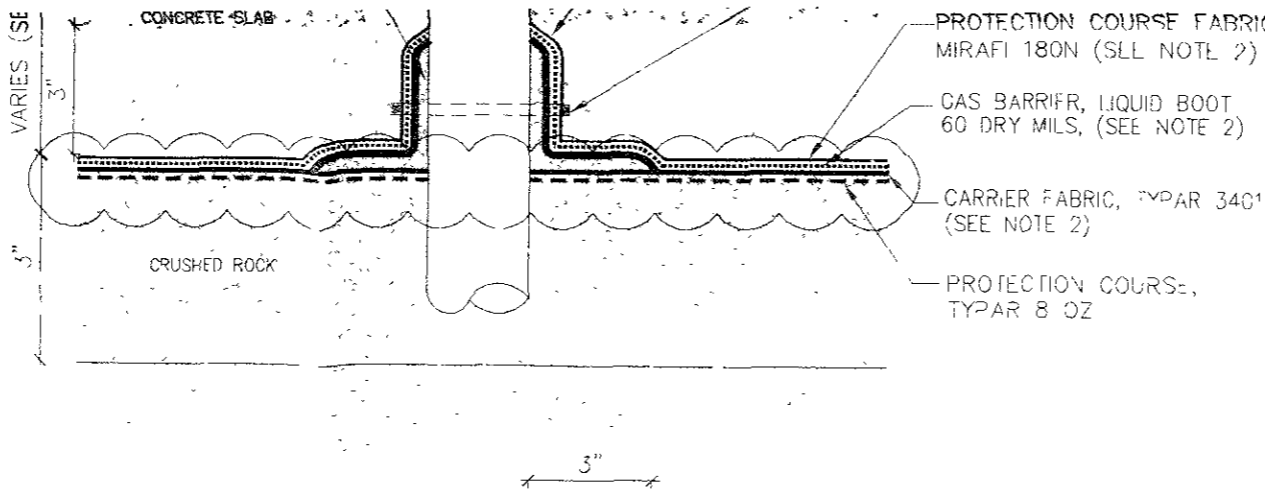
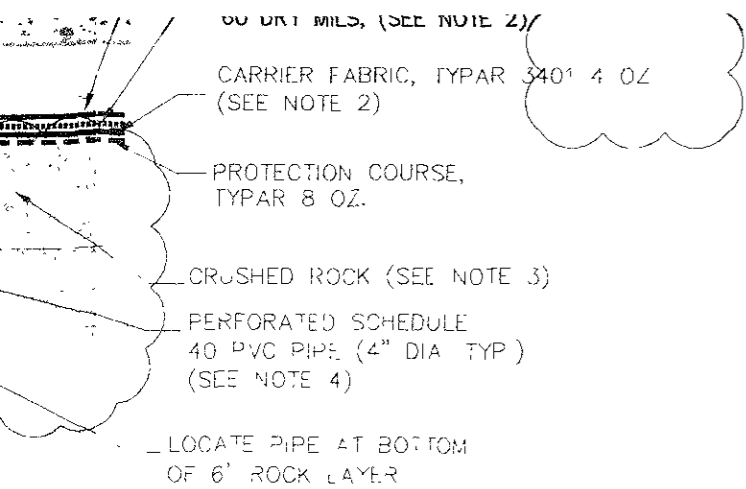
Michael Willis Architects
471 Ninth Street
Oakland, CA 94607
tel:(510) 287-9710

Treadwell&Rollo
Environmental and Geotechnical Consultants
555 Montgomery Street, Suite 1300
San Francisco, California

MARITIME & 7TH STREET SITE
HARBOR FACILITIES CENTER
SOIL GAS MITIGATION SYSTEM - DETAILS

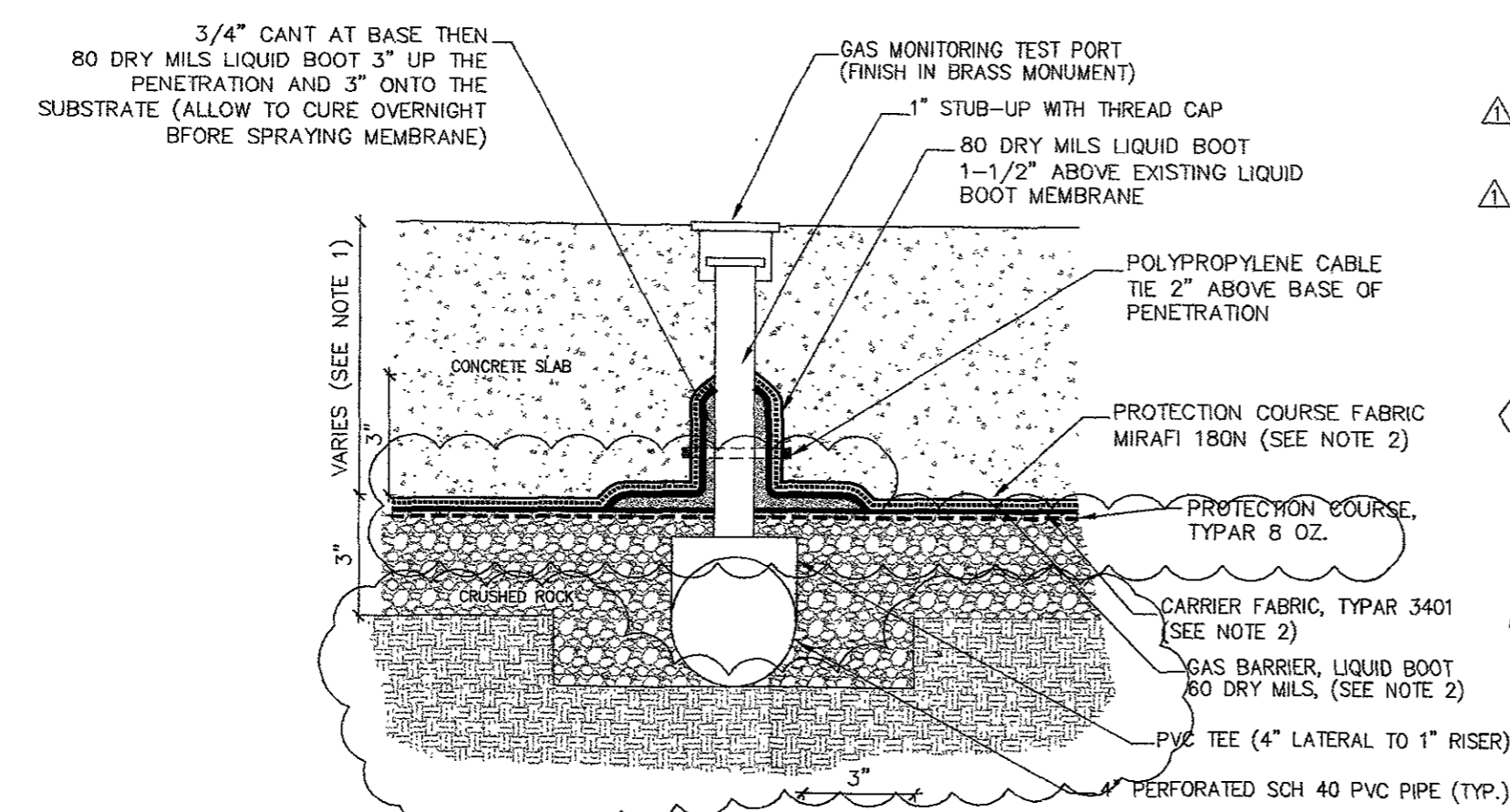
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SHEET: 21 OF 203 SHEETS
MT2.02 AA-3827

SCALE



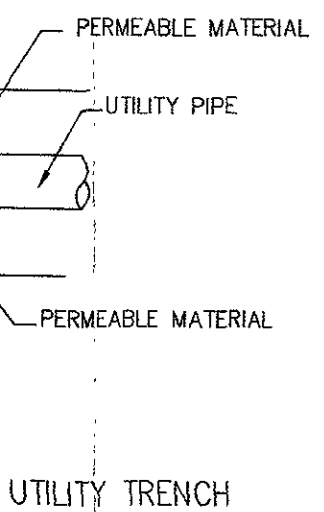
B TYPICAL SEALING OF ALL PENETRATIONS THROUGH CONCRETE SLAB
 NOT TO SCALE

C RISER AND TURBINE AT ROOF
 NOT TO SCALE



E SOIL GAS TEST PORT
 NOT TO SCALE

- NOTES:
- ALL LOCATIONS AND DIMENSIONS OF BUILDING SLABS, FOOTINGS, AND GRADE BEAMS TO BE CONFIRMED WITH STRUCTURAL DETAILS.
 - THE LIQUID BOOT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND QA/QC REQUIREMENTS, OUTLINED IN SECTION 07141 FLUID APPLIED BARRIER SYSTEM BY A MANUFACTURER APPROVED APPLICATOR. SLAB PENETRATIONS SHALL NOT BE IN CONTACT WITH AN ADJACENT PENETRATION THAT WOULD PREVENT PROPER SEALING OF THE PENETRATION CIRCUMFERENCE. PROTECTION COURSE FABRIC SHALL BE MIRAFI 180N NON-WOVEN GEOTEXTILE. CARRIER FABRIC SHALL BE TYPAR 3401, WITH THE HEAT-TREATED SIDE FACING THE LIQUID BOOT.
 - CRUSHED ROCK SHALL BE 1/4" X 3/4" SURFACE OF CRUSHED ROCK LAYER SHALL BE SMOOTH-ROLLED PRIOR TO APPLICATION OF THE CARRIER FABRIC.
 - THE HORIZONTAL PIPE SHALL BE OF SCHEDULE 40 PVC, HANCOR SMOOTHWALL DRAIN PIPE, OR SIMILAR QUALITY PLASTIC PIPE. INDICATED SECTIONS OF HORIZONTAL PIPE SHALL BE PERFORATED WITH 5/8 INCH DIAMETER HOLES, THREE HOLES ACROSS THE UPPER ONE-THIRD OF THE PIPE, EVERY THREE INCHES ALONG THE PERFORATED SECTION; AN ADDITIONAL 5/8 INCH DIAMETER HOLE SHALL BE DRILLED ON THE UNDERSIDE OF THE PIPE AT LEAST EVERY 2 LINEAR FEET ALONG THE PERFORATED SECTION TO ALLOW WATER, IF ANY, TO DRAIN FROM THE PIPE.
 - SLAB PENETRATION SHALL NOT BE IN CONTACT WITH ADJACENT PENETRATIONS OR STEEL COLUMNS TO ALLOW TROWEL GRADE LIQUID BOOT APPLICATION AROUND ENTIRE PENETRATION CIRCUMFERENCE.
 - THE VERTICAL RISER PIPE TO THE WIND TURBINE SHALL BE SUPPORTED AT THE PIPE CHASE WALLS AND LABELED AS "CONTAINS COMBUSTIBLE GAS; DO NOT BREAK OR CUT".
 - A TEST PORT SHALL BE INSTALLED TO SAMPLE AIR FROM THE COLLECTION PIPE 36 INCHES ABOVE ROOF LEVEL.
 - THE VERTICAL RISER PIPE TO THE WIND-ASSISTED TURBINE VENT SHALL BE 4 INCH DIAMETER SCHEDULE 80 PVC AND EXTEND TO AN ELEVATION 15 FEET ABOVE THE ROOF LEVEL.
 - PROVIDE 1-INCH DIAMETER ELECTRICAL CONDUIT TO RISER FOR POSSIBLE FUTURE POWER NEEDS TO A MECHANICAL VACUUM BLOWER. COORDINATE WITH ELECTRICAL DRAWINGS.
 - THE WIND-ASSISTED TURBINE VENT ON TOP OF THE 4 INCH PVC RISER SHALL BE 24 INCH DIA. GALVANIZED STEEL (McMASTER-CARR CAT# 1992K24) AND SHALL BE INDEPENDENTLY SUPPORTED FROM PVC RISER.
 - TURBINE SHALL BE ADAPTED TO FIT A 4 INCH PIPE.
 - PIPE PENETRATIONS THROUGH THE PERIMETER GRADE-BEAM SHALL BE OF SCHEDULE 80 PVC. THE VENT PIPE CAP SHALL KEEP OUT DEBRIS BUT ALLOW AIR TO ENTER. THE PIPE CONTRACTOR SHALL COORDINATE PLACEMENT OF PIPING INSIDE EXTERIOR WALL WITH ARCHITECT AND SUBMIT SAMPLE CAP TO ARCHITECT FOR APPROVAL. VENTS SHALL BE LOCATED A MINIMUM OF 36 INCHES AWAY FROM DOOR JAMS.
 - FOUR 1/8" AIRCRAFT CABLES USED TO SECURE RISER TO PREVENT EXCESSIVE MOVEMENT.



<p>Michael Willis Architects 471 Ninth Street Oakland, CA 94607 tel: (510) 287-9710</p>			
<p>Treadwell & Rollo Environmental and Geotechnical Consultants 555 Montgomery Street, Suite 1300 San Francisco, California</p>			
MARITIME & 7TH STREET SITE		DATE: 07/13/05	
HARBOR FACILITIES CENTER		SCALE:	
SOIL GAS MITIGATION SYSTEM -- DETAILS		SHEET: 20A OF 203 SHEETS	
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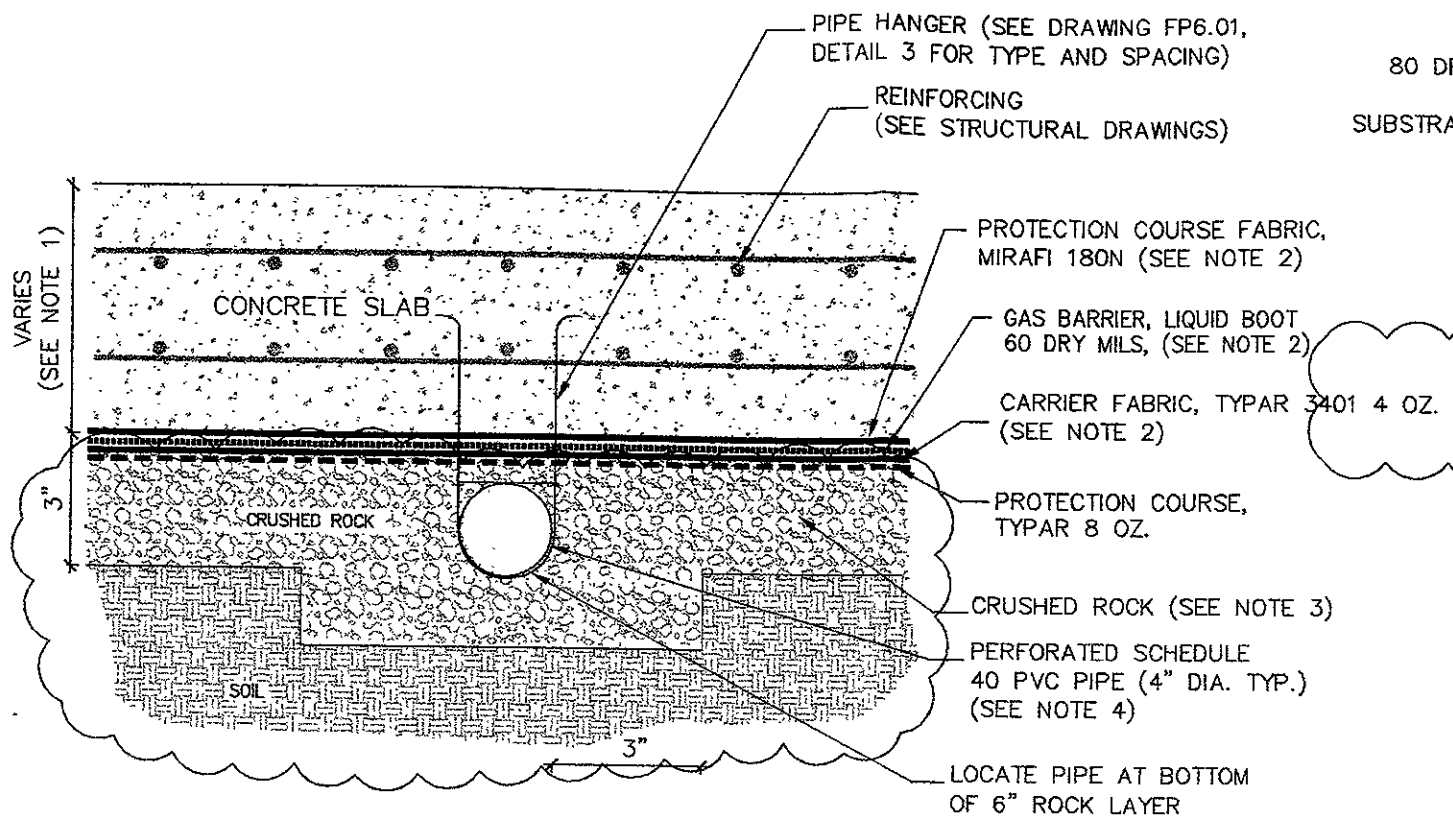
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REVIEWED	FACILITIES DEPARTMENT	DESIGNED	BKM
REVIEWED	CONSTRUCTION DEPARTMENT	CHECKED	BKM
REVIEWED	PROJECT PLANNING DEPARTMENT	REVIEWED	BKM

SEE CONFORMED SET FOR SIGNATURES

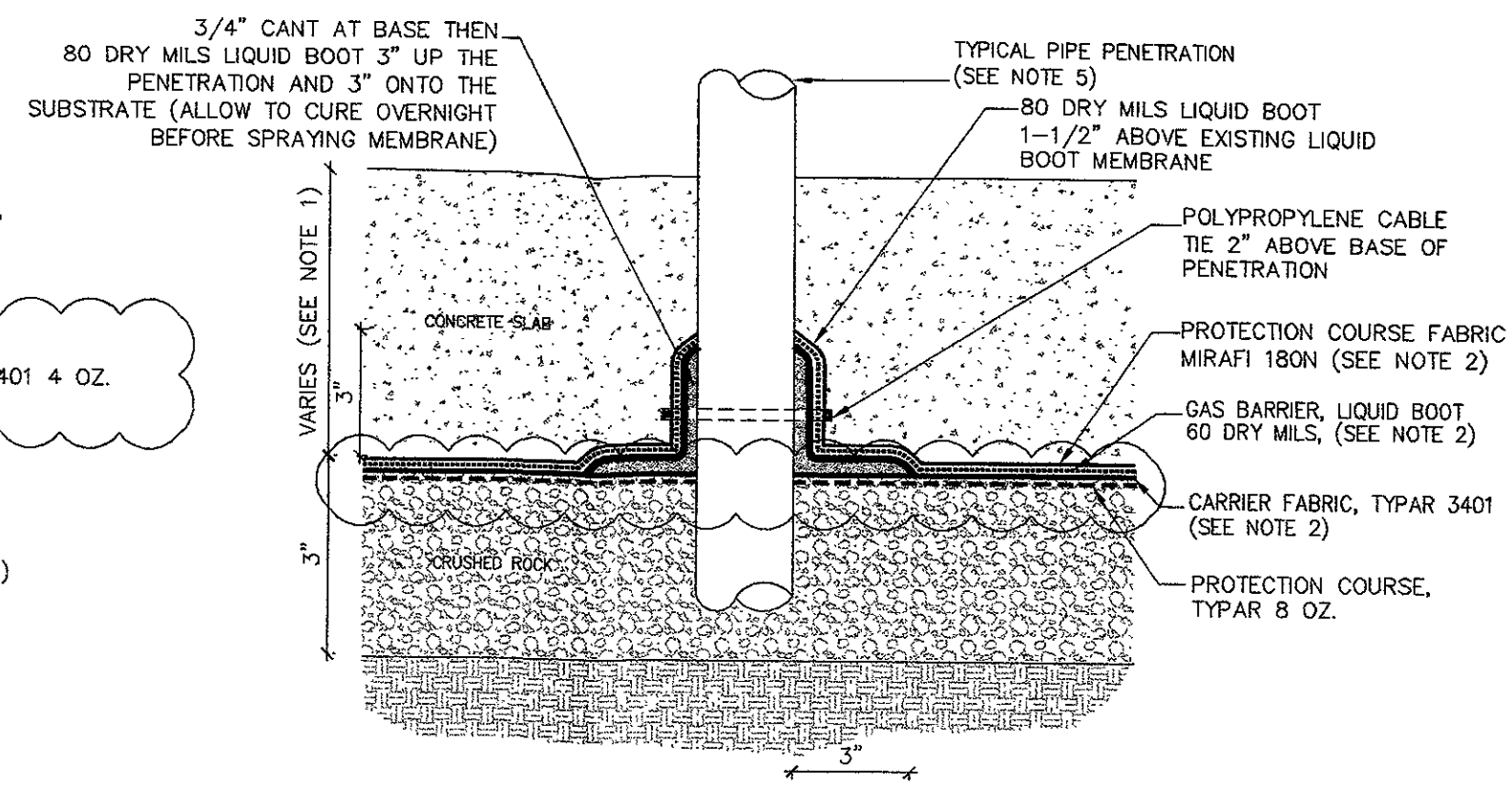
PORT OF OAKLAND
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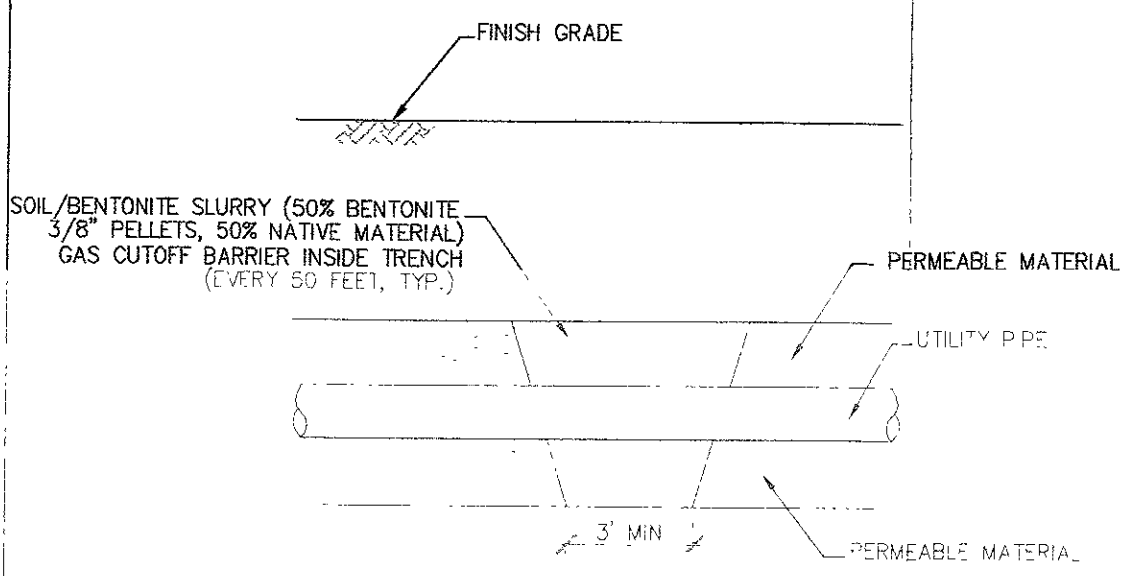
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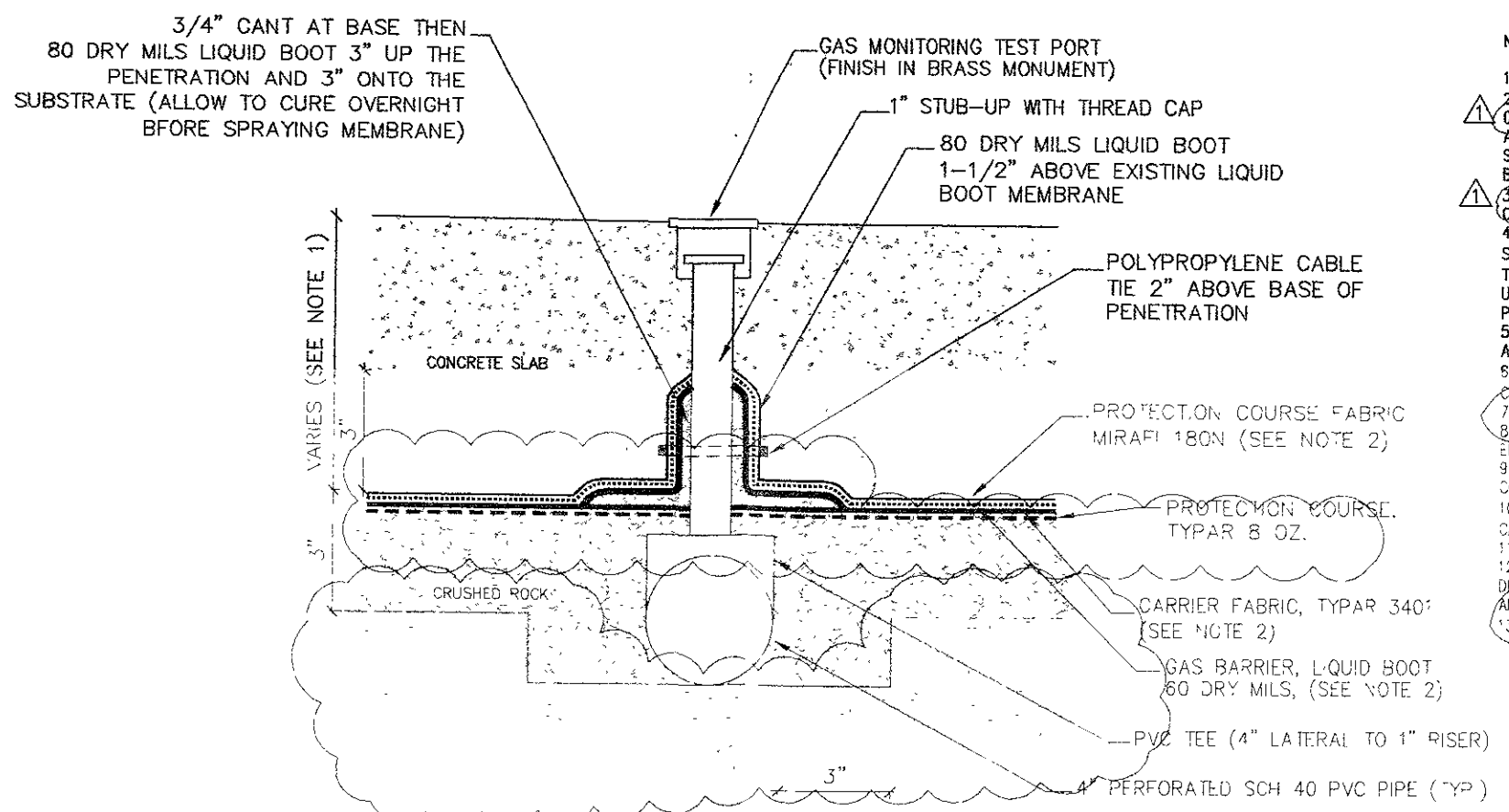
A SOIL GAS COLLECTION SYSTEM LATERAL
NOT TO SCALE



B TYPICAL SEALING OF ALL PENETRATIONS THROUGH CONCRETE SLAB
NOT TO SCALE



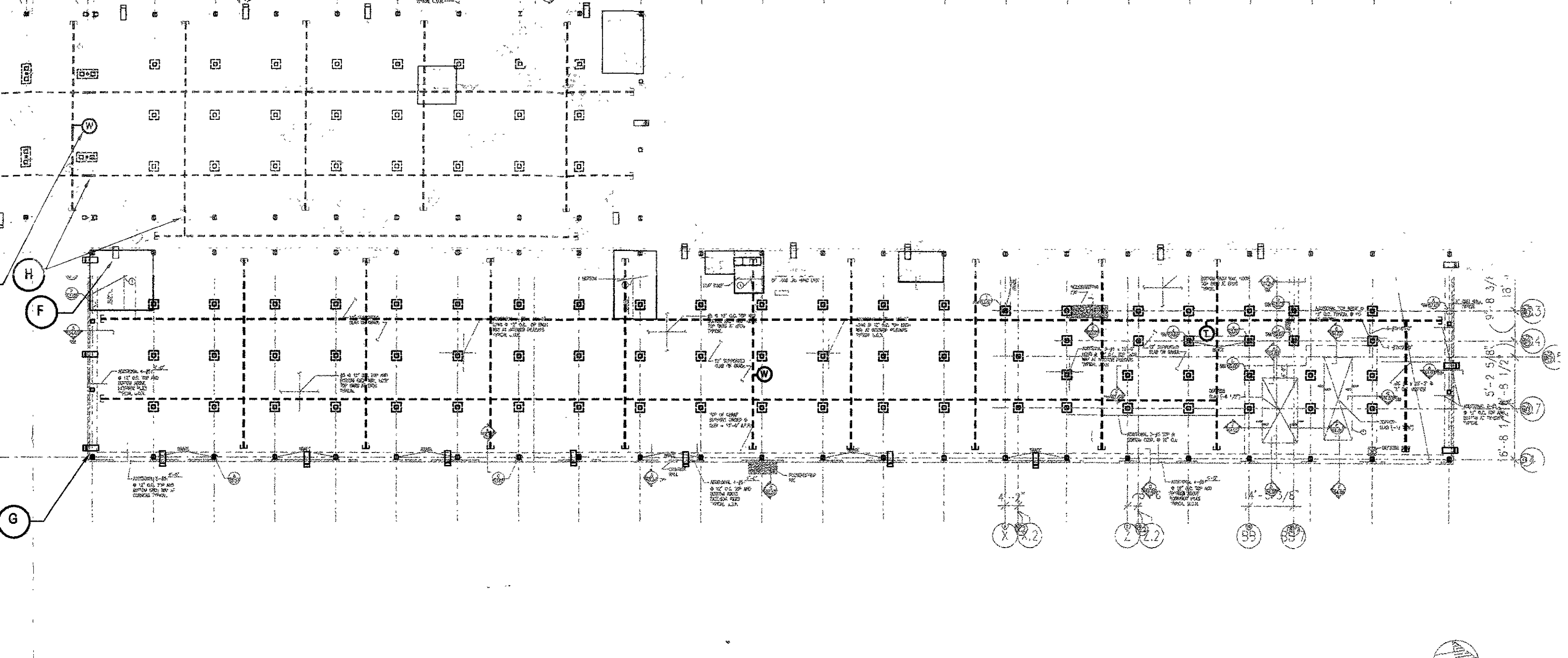
D UTILITY SOIL GAS CUT-OFF BARRIER IN UTILITY TRENCH
NOT TO SCALE



E SOIL GAS TEST PORT

NOTES:

1. ALL LOCATIONS AND DIMENSIONS OF
2. THE LIQUID BOOT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S (07141 FLUID APPLIED BARRIER SYSTEM) AND AN ADJACENT PENETRATION THAT WOULD BE MIRAFI 180N NON-WOVEN GEO BOOT.
3. CRUSHED ROCK SHALL BE 1/4" X 3/8" CARRIER FABRIC.
4. THE HORIZONTAL PIPE SHALL BE OF SECTIONS OF HORIZONTAL PIPE SHALL BE THE PIPE, EVERY THREE INCHES ALONG UNDERSIDE OF THE PIPE AT LEAST EVERY PIPE.
5. SLAB PENETRATION SHALL NOT BE IN APPLICATION AROUND ENTIRE PENETRATION.
6. THE VERTICAL RISER PIPE TO THE WE COMBUSTIBLE GAS, DO NOT BREAK OR C
7. A TEST PORT SHALL BE INSTALLED TO
8. THE VERTICAL RISER PIPE TO THE WE ELEVATION 15 FEET ABOVE THE ROOF LEV
9. PROVIDE 1-INCH DIAMETER ELECTRICAL COORDINATE WITH ELECTRICAL DRAWINGS
10. THE WIND-ASSISTED TURBINE VENT CAT# 1992K24) AND SHALL BE INDEPEND
11. TURBINE SHALL BE ADAPTED TO FIT
12. PIPE PENETRATIONS THROUGH THE DEBRIS BUT ALLOW AIR TO ENTER THE PH AND SUBMIT SAMPLE CAP TO ARCHITECT
13. FOUR 1/8" AIRCRAFT CABLES USED




LEGEND

- 4" DIAMETER SCHEDULE 40 SOLID PVC PIPE
- - - 4" DIAMETER SCHEDULE 40 PERFORATED PVC PIPE
- J END CAP
- ▭ PERIMETER GRADE BEAM VENT
- ▭ INTERIOR GRADE BEAM VENT

- (W) WIND ASSISTED RISER; INSTALL IN DESIGNATED WALL (SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION)
- (T) UNDERSLAB SOIL GAS TEST PORT (SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION)
- (A) SEE DETAIL A, SHEET MT2.01



KEY PLAN

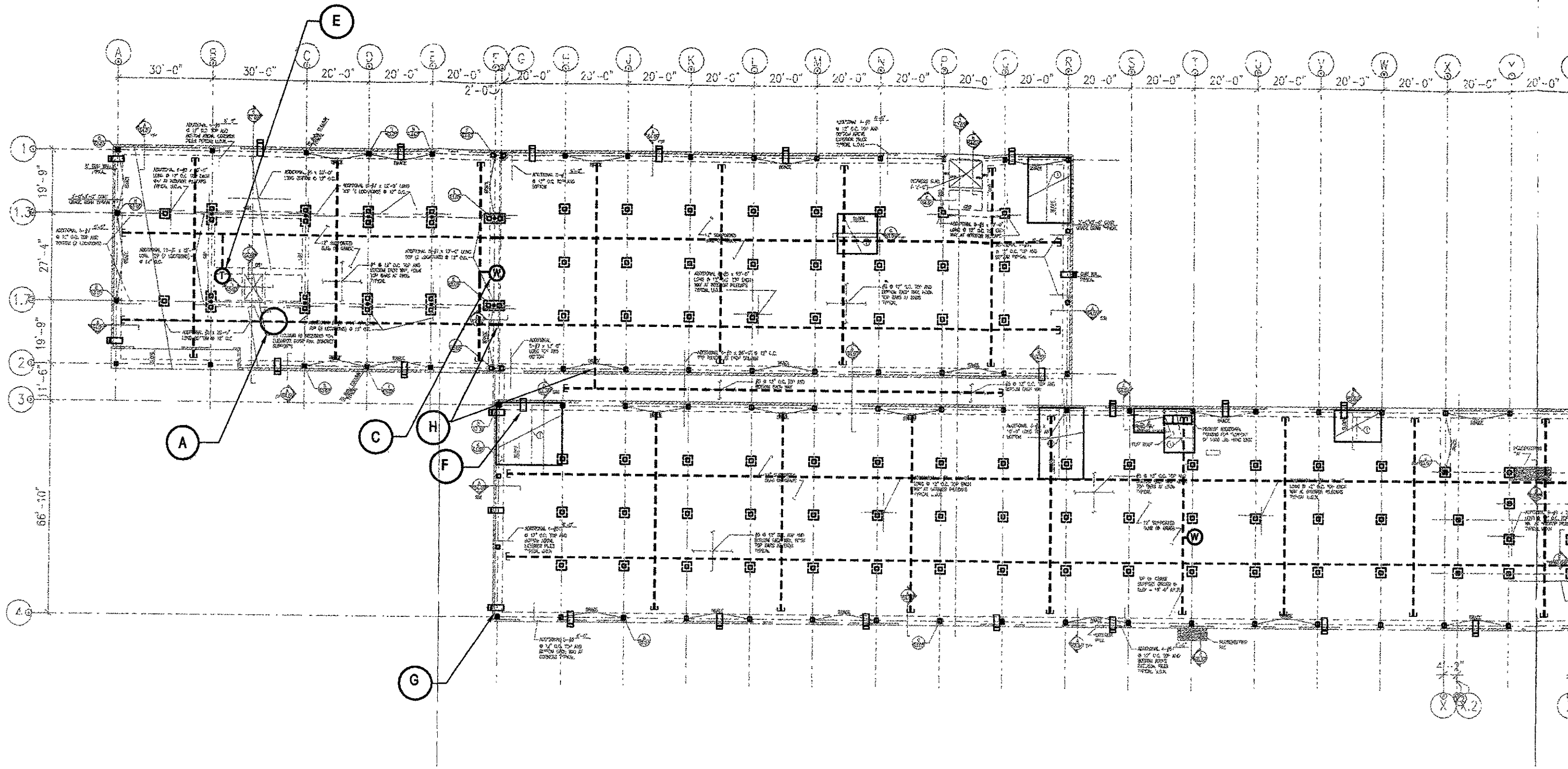
	<p>Michael Willis Architects 471 Ninth Street Oakland, CA 94607 tel: (510) 287-9710</p>
<p>Treadwell & Rollo Environmental and Geotechnical Consultants 555 Montgomery Street, Suite 1300 San Francisco, California</p>	
<p>MARITIME & 7TH STREET SITE</p>	
<p>HARBOR FACILITIES CENTER</p>	
<p>SOIL GAS MITIGATION SYSTEM - PLAN</p>	
	DATE: 07/13/05
	SCALE:
	SHEET: 19 OF 203 SHEETS
	MT1.01 AA-3827

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REVIEWED	FACILITIES DEPARTMENT	DESIGNED	BKM		
REVIEWED	CONSTRUCTION DEPARTMENT	CHECKED	BKM		
REVIEWED	PROJECT PLANNING DEPARTMENT	REVIEWED	BKM		
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				REG. ENGINEER NO.	




PORT OF OAKLAND


530 WATER ST. OAKLAND, CALIFORNIA

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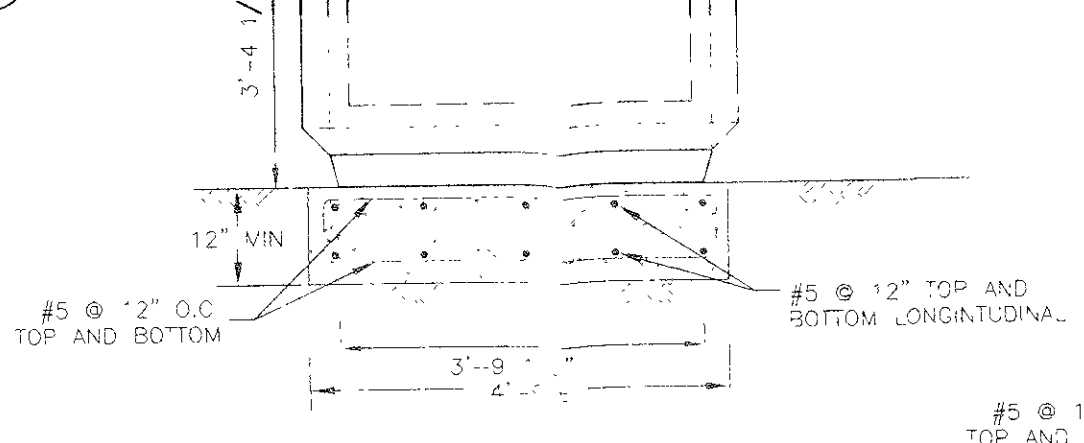
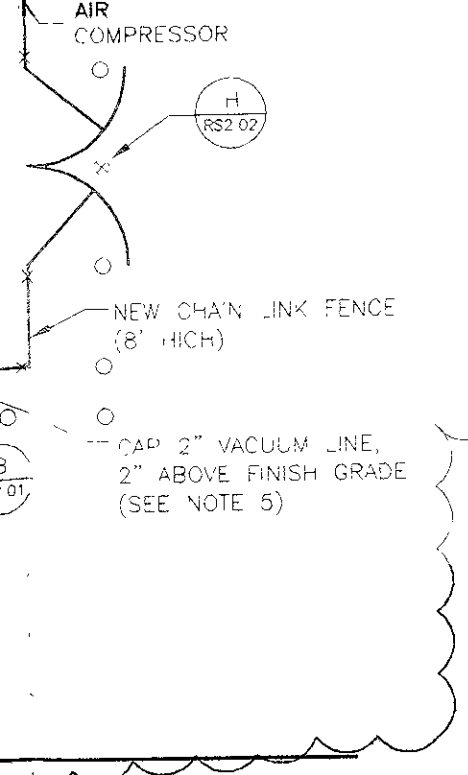


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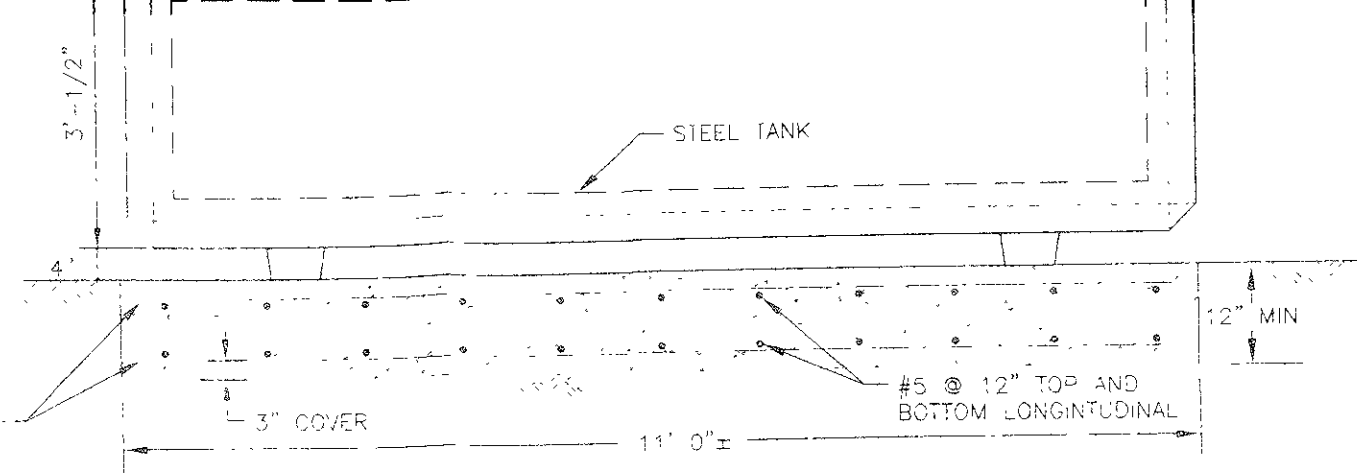
-  4" DIAMETER SCHEDULE 40 SOLID PVC PIPE
-  4" DIAMETER SCHEDULE 40 PERFORATED PVC PIPE
-  END CAP

 W WIND ASSISTED RISER; INSTALL IN DESIGNATED WALL (SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION)

 T UNDERSLAB SOIL GAS TEST PORT (SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION)

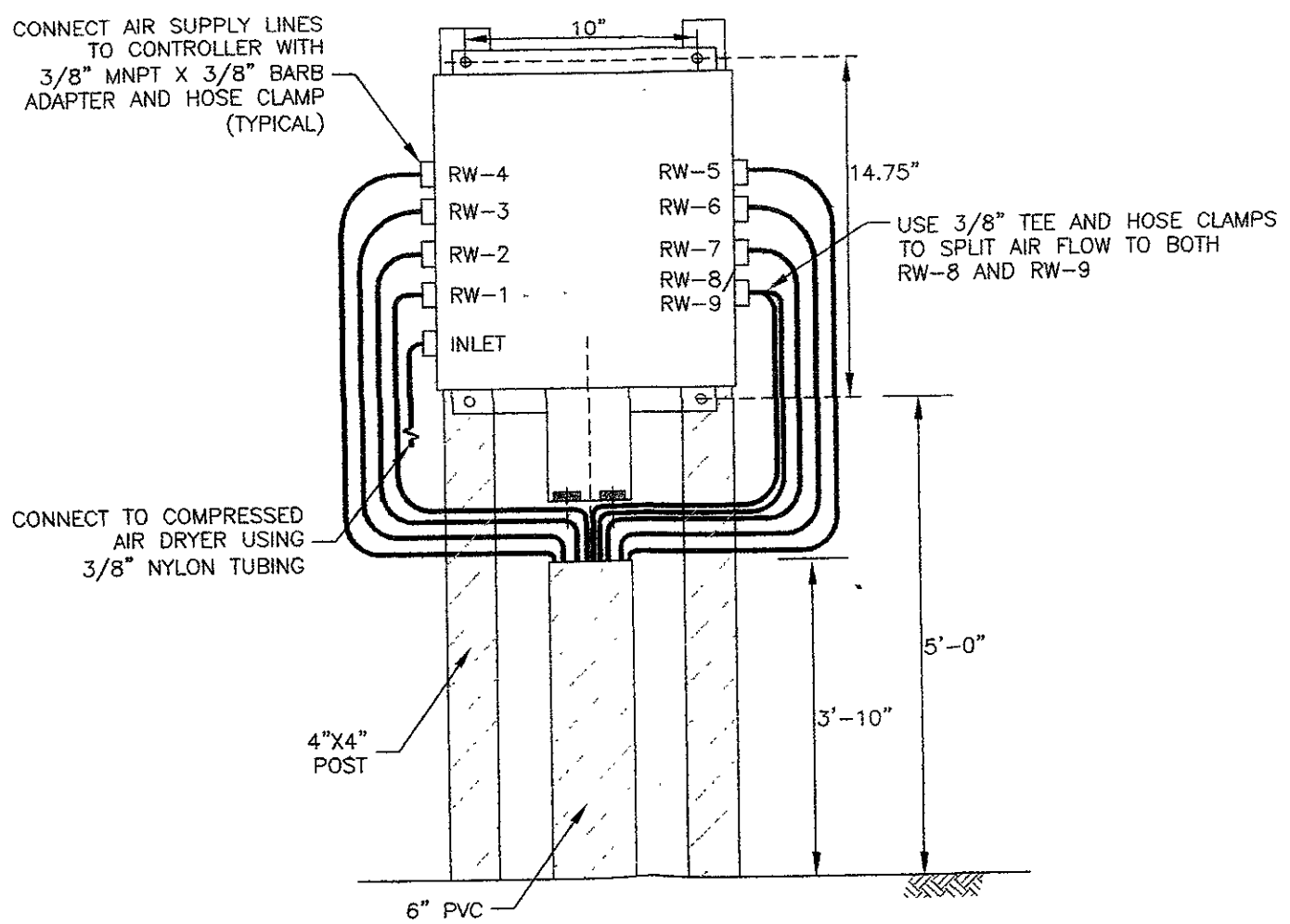


F STORAGE TANK AND FOUNDATION PAD - END VIEW
NOT TO SCALE
STRUCTURAL SLAB BY KPA GROUP, 9/15/03



G STORAGE TANK AND FOUNDATION PAD - SIDE VIEW
NOT TO SCALE
STRUCTURAL SLAB BY KPA GROUP, 9/15/03

1" X 6" X 3/16" STEEL BAR WITH A 3/16 Ø HOLE FOR PAD LOCK PLACED ABOVE STEEL PLATE
2"
PAVEMENT EDGE



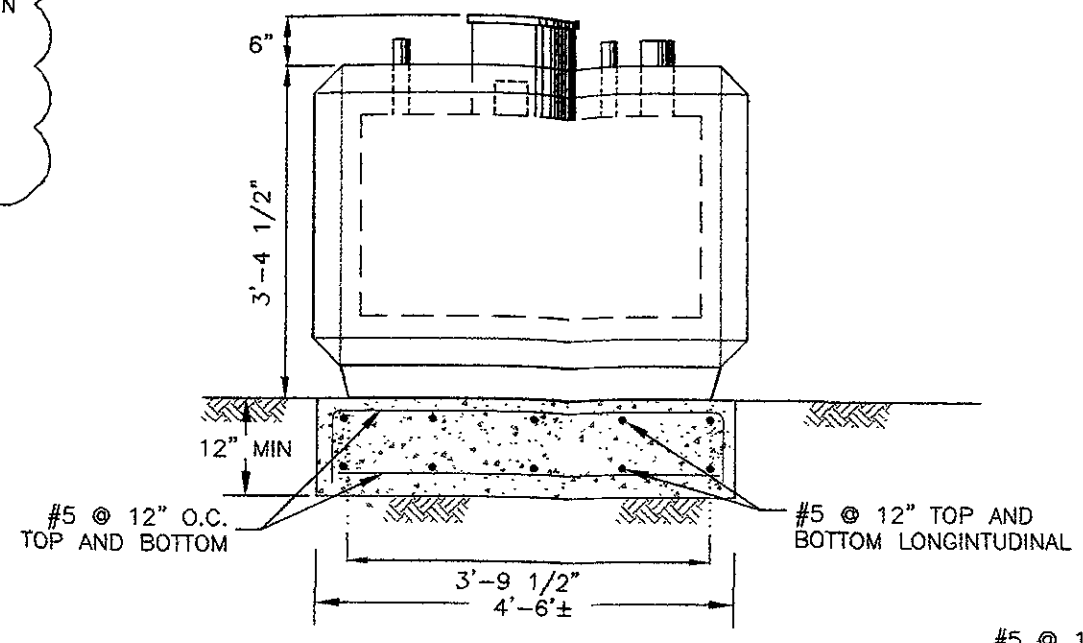
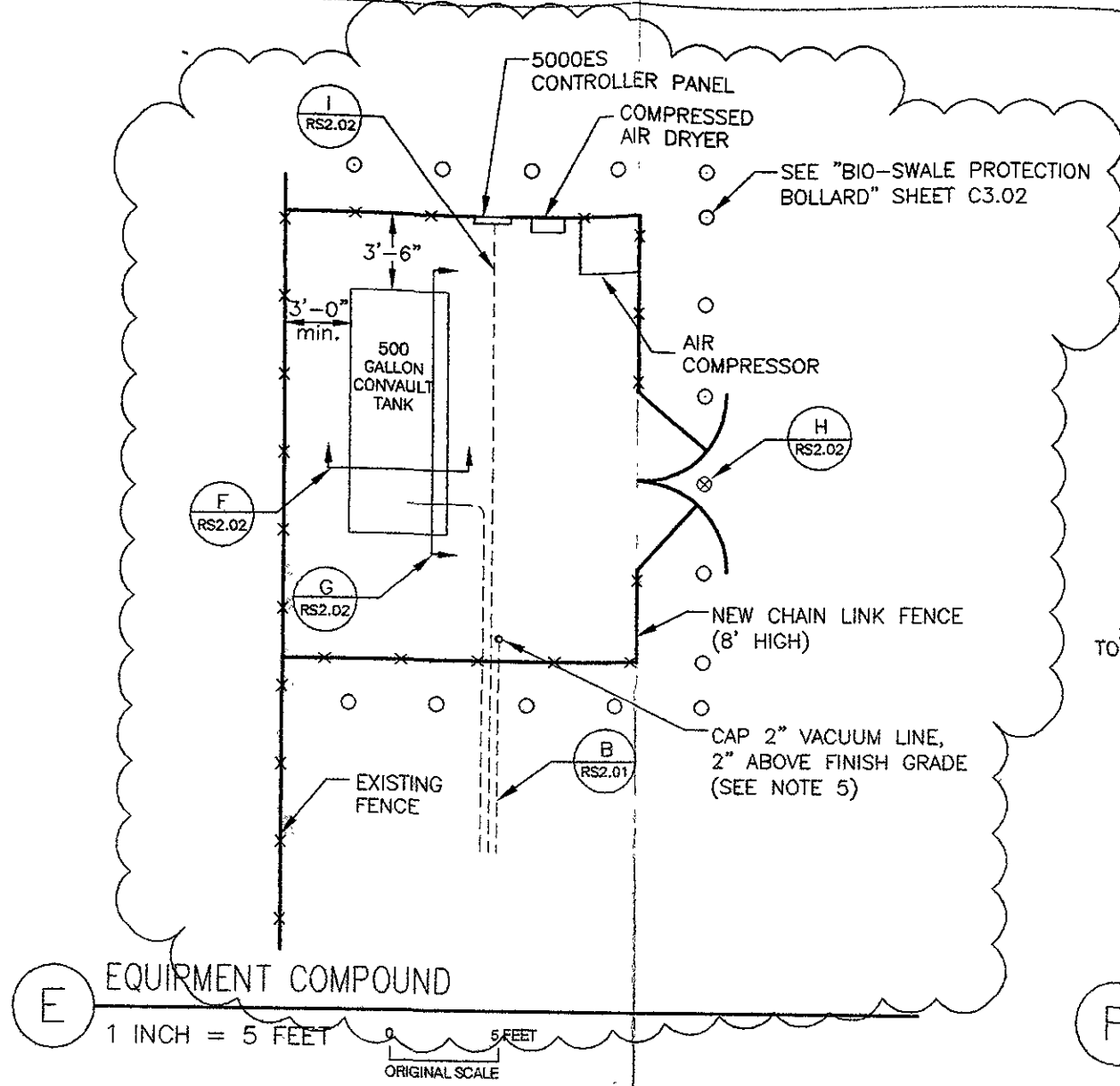
I XITECH MODEL 5000ES CONTROLLER PANEL
NOT TO SCALE

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REVIEWED	CONSTRUCTION DEPARTMENT	DESIGNED	BKM C 57489
REVIEWED	PROJECT PLANNING DEPARTMENT	CHECKED	BKM C 57489
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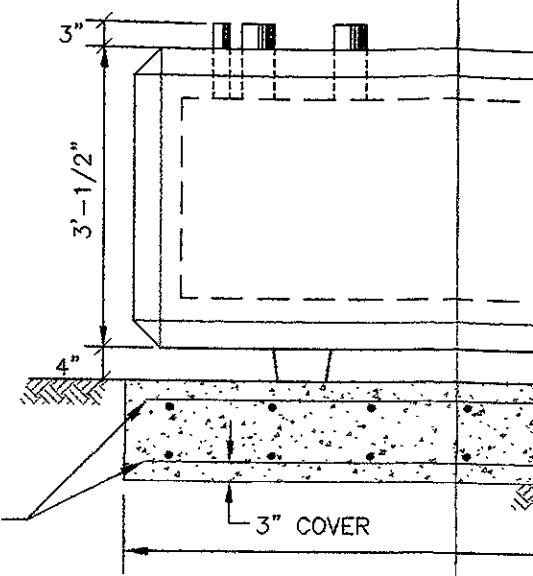
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CHIEF ENGINEER
[Signature] C 23297
APPROVED
[Signature] C 33213
RECOMMENDED
[Signature] C 43841

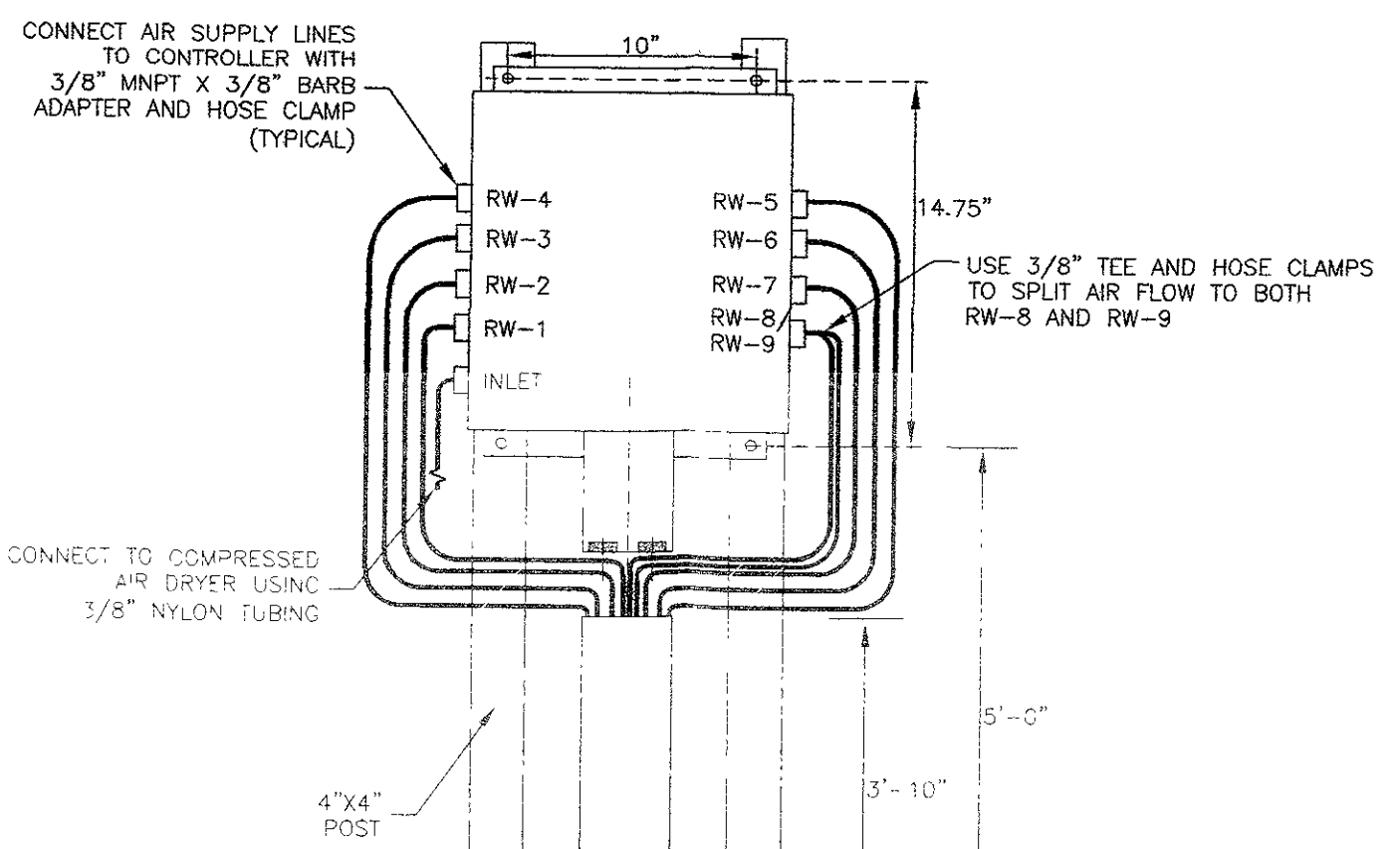
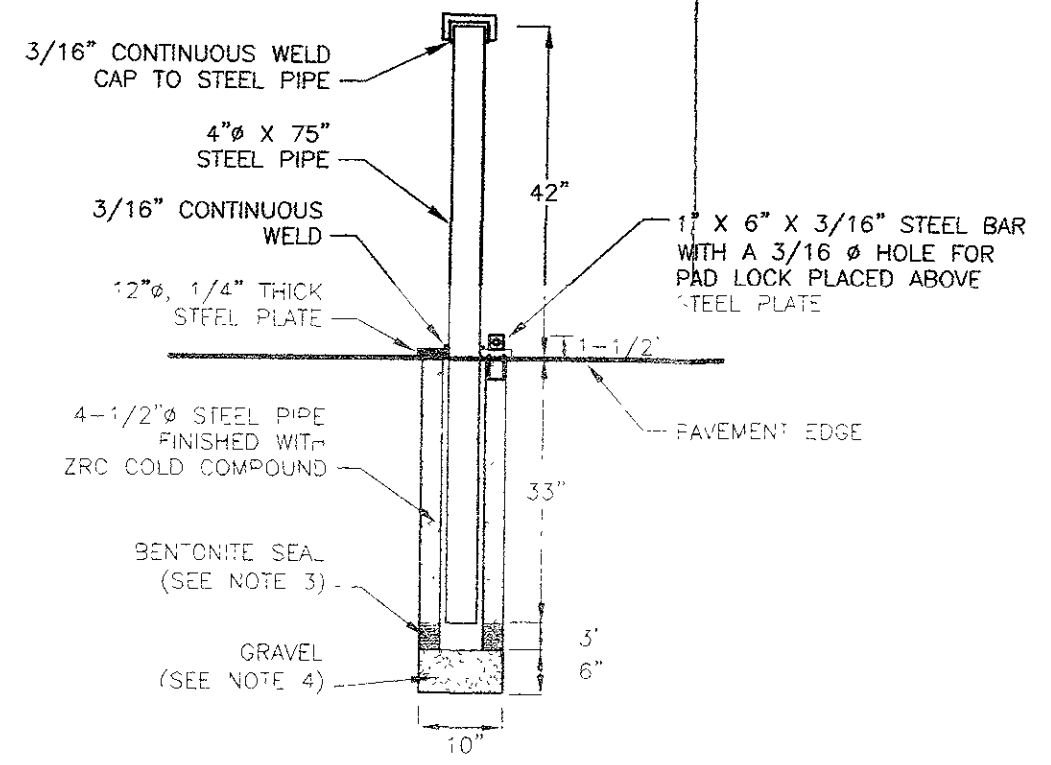
	Michael Willis Architects 471 Ninth Street Oakland, CA 94607 tel: (510) 287-9710
	Treadwell & Rollo Environmental and Geotechnical Consultants 555 Montgomery Street, Suite 1300 San Francisco, California (415) 955-9040
MARITIME & 7TH STREET SITE	DATE: 07/13/05
HARBOR FACILITIES CENTER	SCALE:
FREE PRODUCT RECOVERY SYSTEM - DETAILS	SHEET: 22-2 OF 203 SHEETS
RS2.02	AA-3827



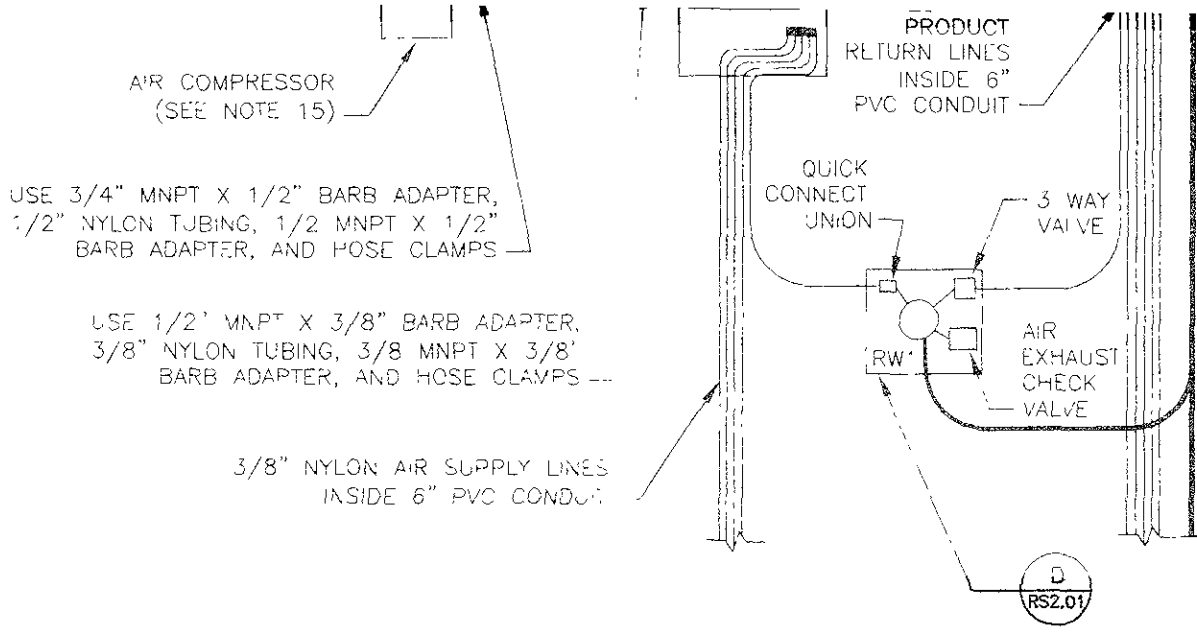
F STORAGE TANK AND FOUNDATION PAD - END VIEW
 NOT TO SCALE
 STRUCTURAL SLAB BY KPA GROUP, 9/15/03



G STORAGE TANK
 NOT TO SCALE



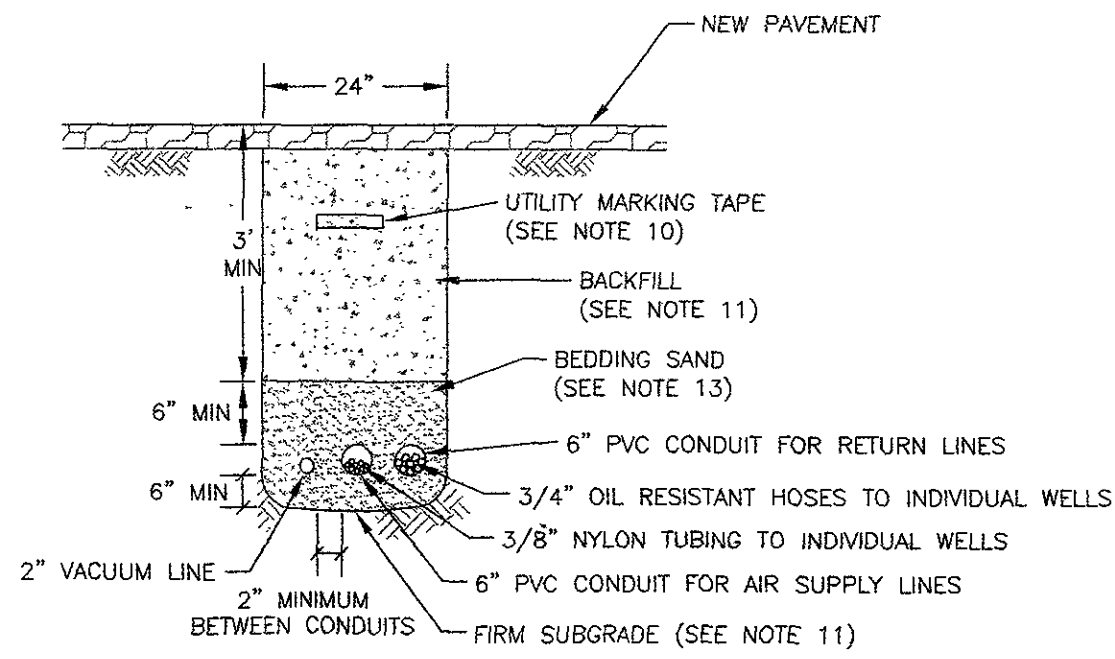
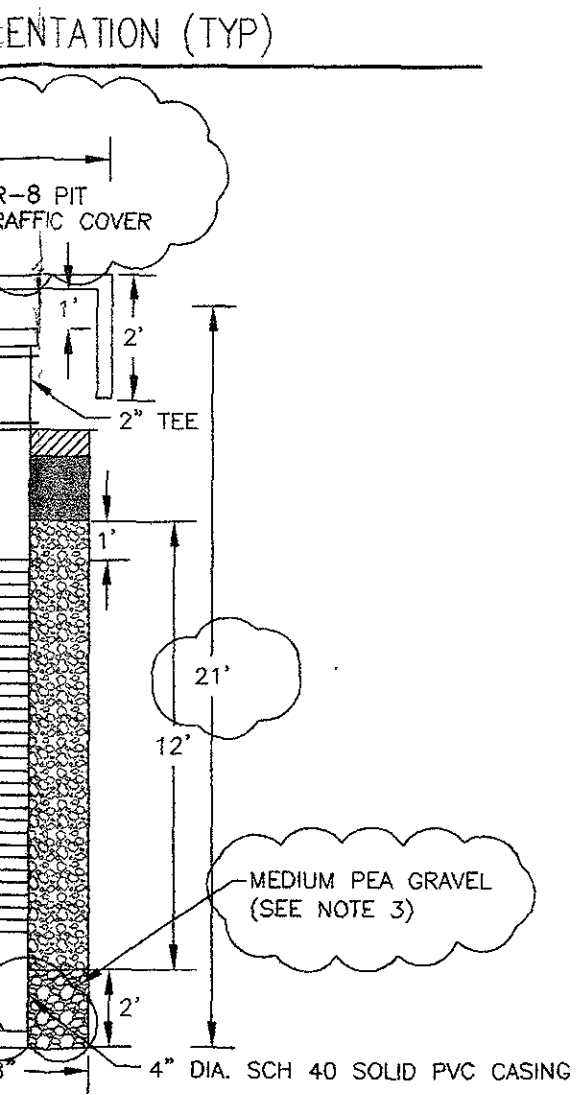
VACUUM LINE
 BALL VALVE
 OIL RESISTANT TUBING
 ROPE
 NYLON AIR SUPPLY TUBING
 SKIMMER
 TE (3)
 PRODUCT
 WATER



AIR COMPRESSOR (SEE NOTE 15)
 USE 3/4" MNPT X 1/2" BARB ADAPTER, 1/2" NYLON TUBING, 1/2 MNPT X 1/2" BARB ADAPTER, AND HOSE CLAMPS
 USE 1/2" MNPT X 3/8" BARB ADAPTER, 3/8" NYLON TUBING, 3/8 MNPT X 3/8" BARB ADAPTER, AND HOSE CLAMPS
 3/8" NYLON AIR SUPPLY LINES INSIDE 6" PVC CONDUIT

- RECOVERY WELL INSTALLATION
- LOCATION AND DEPTH OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL CHECK AND VERIFY LOCATIONS OF ALL EXISTING UTILITIES BOTH UNDERGROUND AND OVERHEAD. NO EXCAVATION OR DRILLING SHALL BE DONE UNTIL ALL INVOLVED UTILITY COMPANIES ARE NOTIFIED 24-HOURS IN ADVANCE.
 - ~~"UNDERGROUND SERVICE ALERT" POLICY PROCEDURE IS TO BE FOLLOWED.~~
 - MEDIUM PEA GRAVEL USED FOR THE BOTTOM TWO FEET OF THE BORING
 - PEA GRAVEL SHALL CONSIST OF INERT ROUNDED GRAVEL WHERE 100 PERCENT OF THE MATERIAL PASSES THE 1/2-INCH SCREEN AND 90 PERCENT IS RETAINED ON THE 1/4-INCH SCREEN
 - 90° JOINTS WERE USED WHERE PVC CONDUIT FOR AIR SUPPLY AND PRODUCT RETURN LINES LEFT THE MAIN TRENCH AND ENTERED RECOVERY WELL TRENCHES, HOWEVER, A SMOOTH TRANSITION WAS MAINTAINED. THE REST OF THE CONDUIT WAS BUILT WITH SWEEPING BENDS.
 - ALL POLYVINYL CHLORIDE PIPE (PVC) SHALL BE SCHEDULE 40 FITTINGS SHALL BE OF THE SAME MATERIAL AND SHALL BE OF THE SOLVENT-WELD TYPE.
 - BALL VALVES SHALL BE OF THE FULL PORT TYPE AND CONTAIN UNIONS ON BOTH ENDS SO THAT THE VALVE BODY CAN BE REMOVED FROM THE LINE WITHOUT BREAKING DOWN THE PIPING. THE UNIONS, IN TURN, SHALL BE SOLVENT-WELDED TO THE PVC PIPING. THE HANDLE SHALL BE EASILY REMOVABLE AND PARALLEL TO THE PIPING WHEN THE VALVE IS OPEN.
 - WHERE CHANGES IN SIZE OCCUR IN ANY AND ALL PIPING, REDUCING FITTINGS SHALL BE USED.
 - IN GENERAL, ALL PIPING CONNECTIONS TO EQUIPMENT SHALL BE PROVIDED WITH UNIONS. A SUFFICIENT NUMBER OF UNIONS SHALL BE USED TO ALLOW FOR THE DISMANTLING OF ALL PIPE, VALVES, AND EQUIPMENT.
 - DETECTABLE UTILITY MARKING TAPE SHALL BE BURIED 18 INCHES BELOW THE SURFACE DIRECTLY ABOVE THE CENTER CONDUIT.
 - SEE GEOTECHNICAL REPORT FOR COMPACTION REQUIREMENTS.
 - POUR SLAB AFTER REVIEW OF EXCAVATION AND COMPACTION AND WRITTEN ACCEPTANCE OF THE GEOTECHNICAL ENGINEER.
 - BEDDING SAND SHALL CONSIST OF WELL GRADED SAND WHERE 100 PERCENT OF THE MATERIAL PASSES THE 3/8-INCH SCREEN AND LESS THAN 1 PERCENT PASSES THE NO. 200 SCREEN. A UTILITY SOIL GAS CUT-OFF BARRIER (MT2.01 DETAIL D) MUST BE INSTALLED EVERY 50 FEET ALONG THE UTILITY TRENCH.
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 - INGERSOLL-RAND MODEL 2475N7.5 80 GALLON AIR COMPRESSOR, 7.5 HP, VERTICAL TANK.
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C PIPING AND INSTRUMENTATION
 NOT TO SCALE



NEAR RW-1 WAS AN EXCEPTION, TOTAL DEPTH OF THE TRENCH WAS 3 FEET

B UTILITY TRENCH (TYP)
 NOT TO SCALE

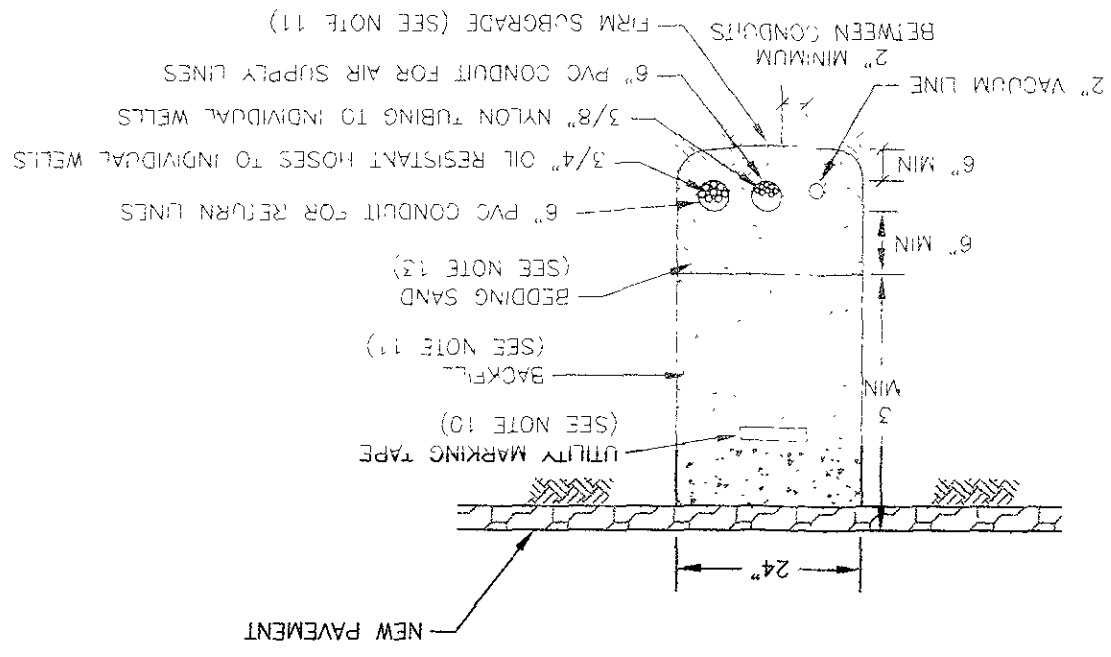
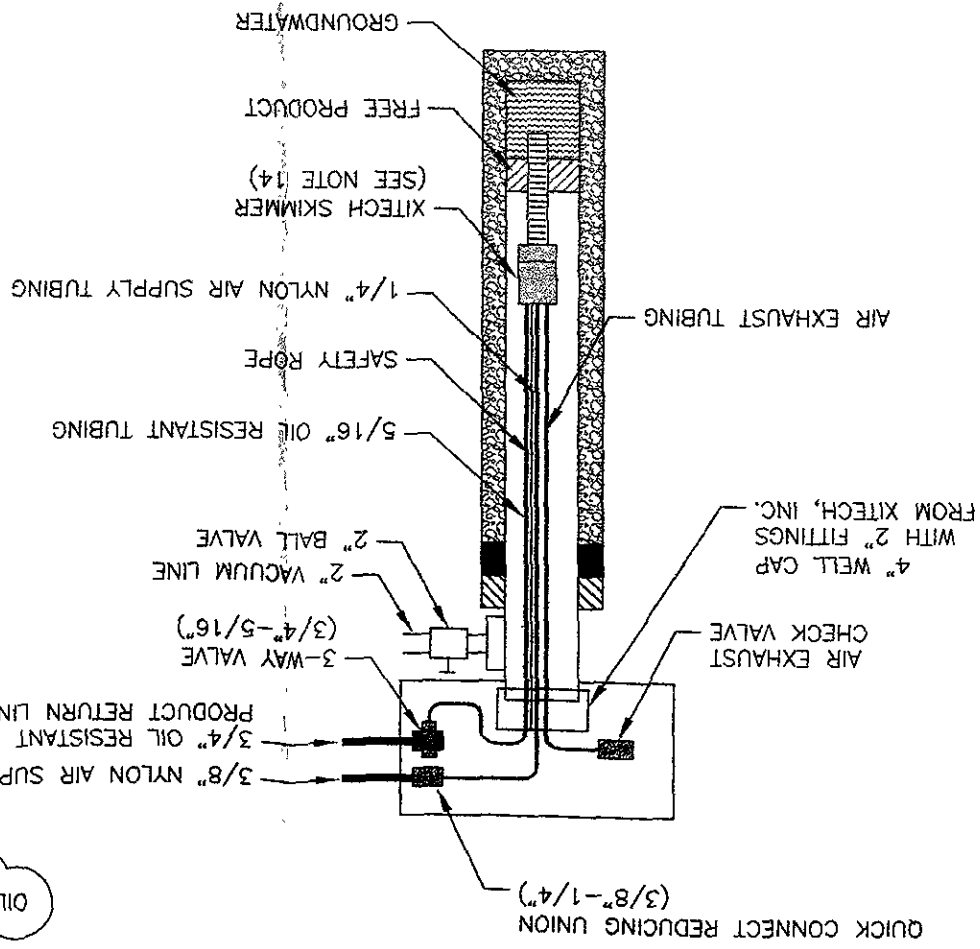
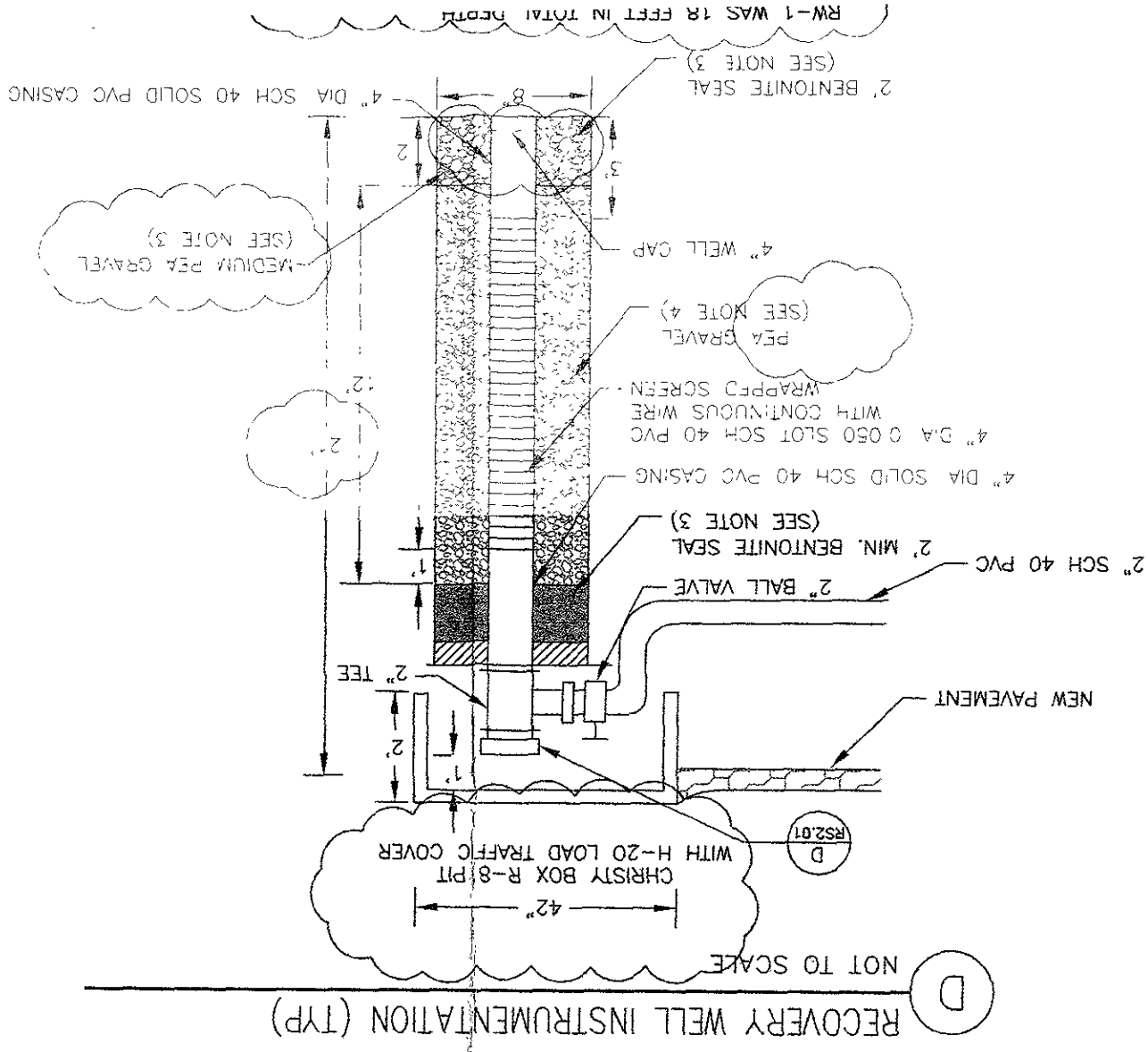
DEPTH.
 FEET IN TOTAL DEPTH.
 SECTION (TYP)

 Michael Willis Architects 471 Ninth Street Oakland, CA 94607 tel: (510) 287-9710	Treadwell & Rollo Environmental and Geotechnical Consultants 555 Montgomery Street, Suite 1300 San Francisco, California (415) 955-9040	MARITIME & 7TH STREET SITE DATE: 07/13/05
	HARBOR FACILITIES CENTER SHEET: 22-2 OF 203 SHEETS	FREE PRODUCT RECOVERY SYSTEM - DETAILS RS2.01 AA-3827

PPD	REVIEWED	FACILITIES DEPARTMENT	DRAWN	JMV
	REVIEWED	CONSTRUCTION DEPARTMENT	DESIGNED	BKM C 57489
	REVIEWED	PROJECT PLANNING DEPARTMENT	CHECKED	BKM REG. ENGINEER NO. C 57489
			REVIEWED	BKM REG. ENGINEER NO. C 57489

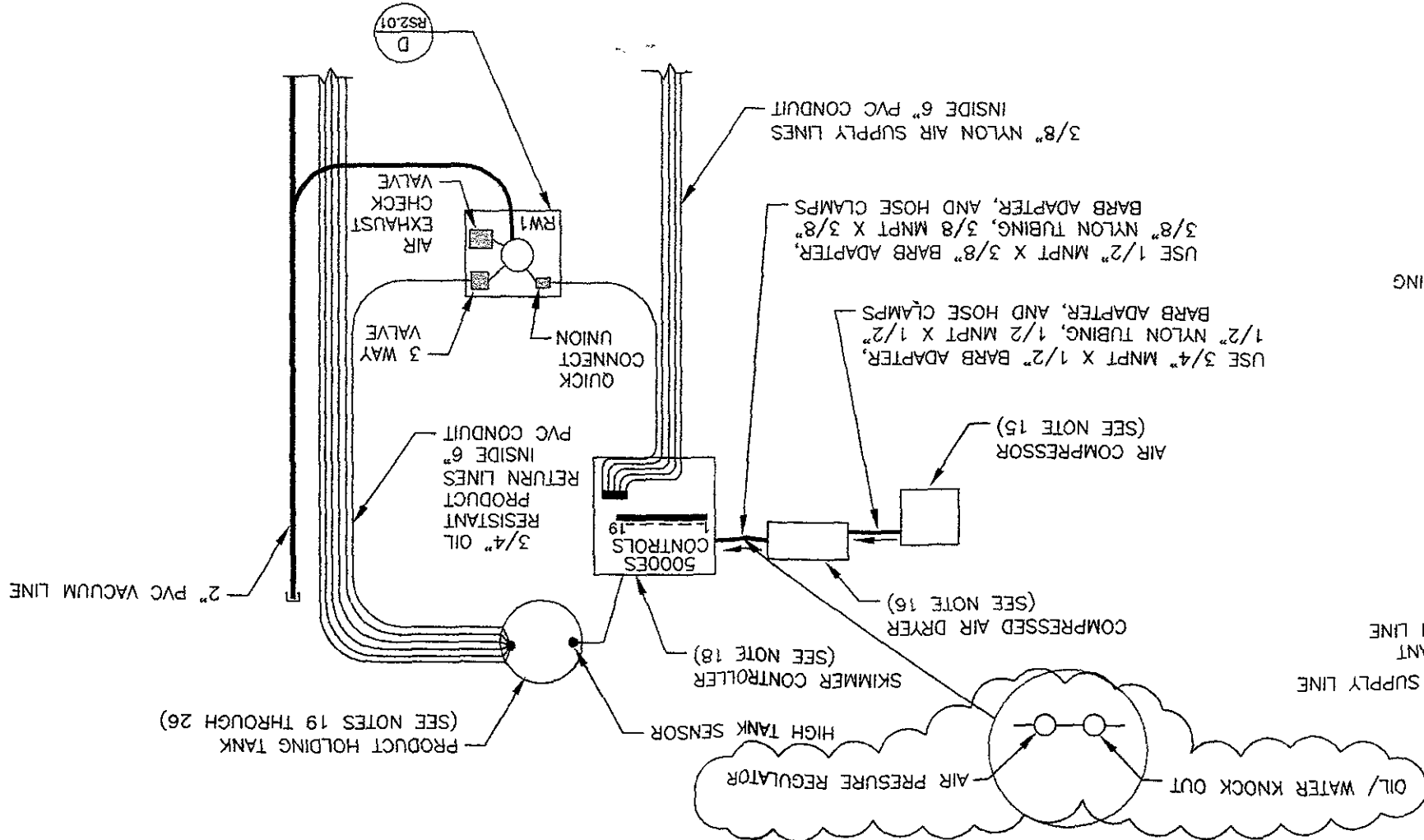
PORT OF OAKLAND
 530 WATER ST. OAKLAND, CALIFORNIA

CHIEF ENGINEER	<i>Christina</i>	C 23297
APPROVED	<i>James DeRosa</i>	C 33213
RECOMMENDED	<i>Chris Chan</i>	C 43841

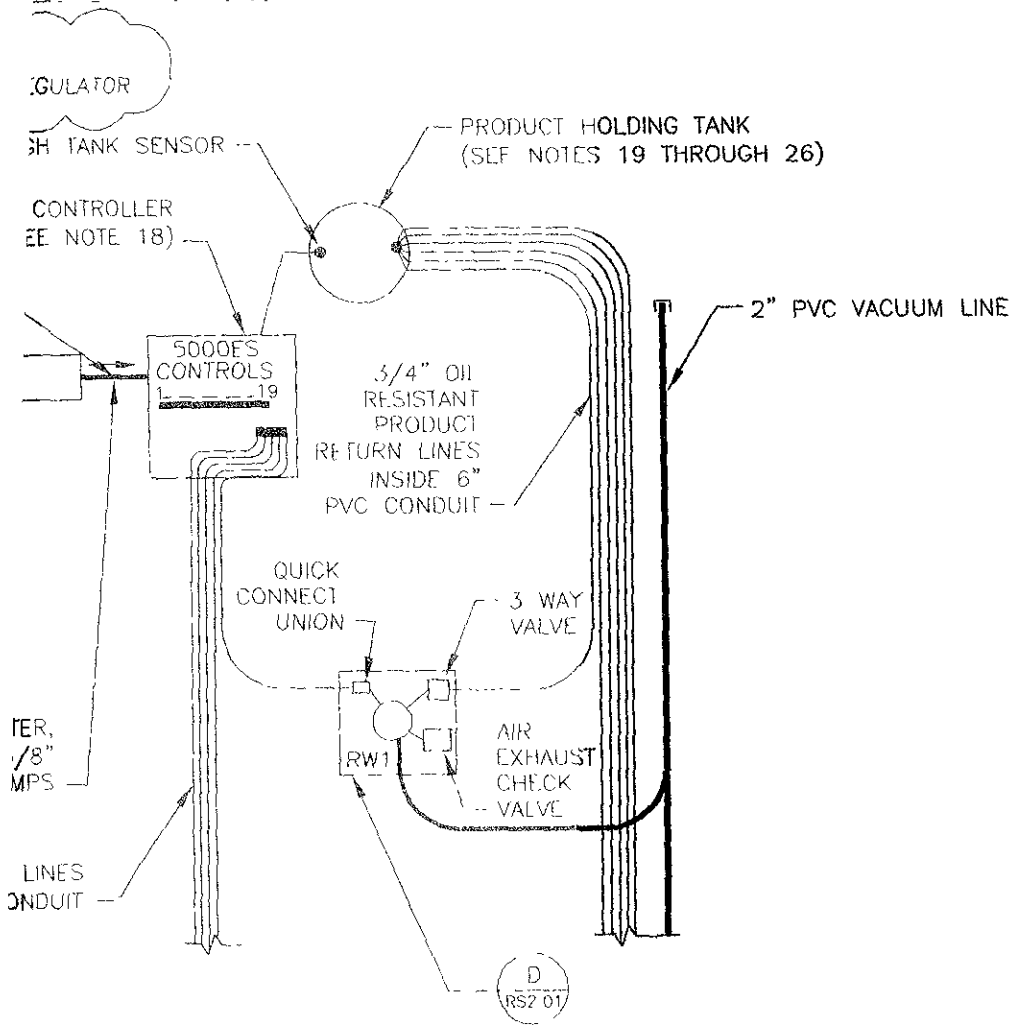


C PIPING AND INSTRUMENTATION
NOT TO SCALE

D RECOVERY WELL INSTRUMENTATION (TYP)
NOT TO SCALE



1. AN ALARM
2. LOCATION
3. MEDIUM
4. PEA GRA
5. RETAINED
6. 90° JOIN
7. PRODUCT RE
8. TRENCHES,
9. THE CONDUIT
10. ALL POL
11. SHALL BE C
12. BALL VAL
13. BOTH ENDS
14. WITHOUT BR
15. SOLVENT-WE
16. REMOVABLE
17. FITTINGS SH
18. IN GENER
19. WITH UNIONS
20. FOR THE DIS
21. DETECTA
22. SEE GEC
23. POUR S
24. ACCEPTANCE
25. BEDDING
26. PERCENT OF
27. PERCENT PA
28. BARRIER (M
29. UTILITY TREN
30. XITECH
31. COORDINATE
32. INGRESSO
33. INGRESSO
34. SEE SHE
35. SKIMMER
36. THE TAN
37. OR EQ
38. THE CO
39. APPLICABLE
40. TH
41. OR COUNTY
42. RESOURCE
43. AGENCY), RE
44. ASSOCIATION
45. INSTALL
46. HAVE KNOW
47. AND SAFE
48. STABLE, FLA

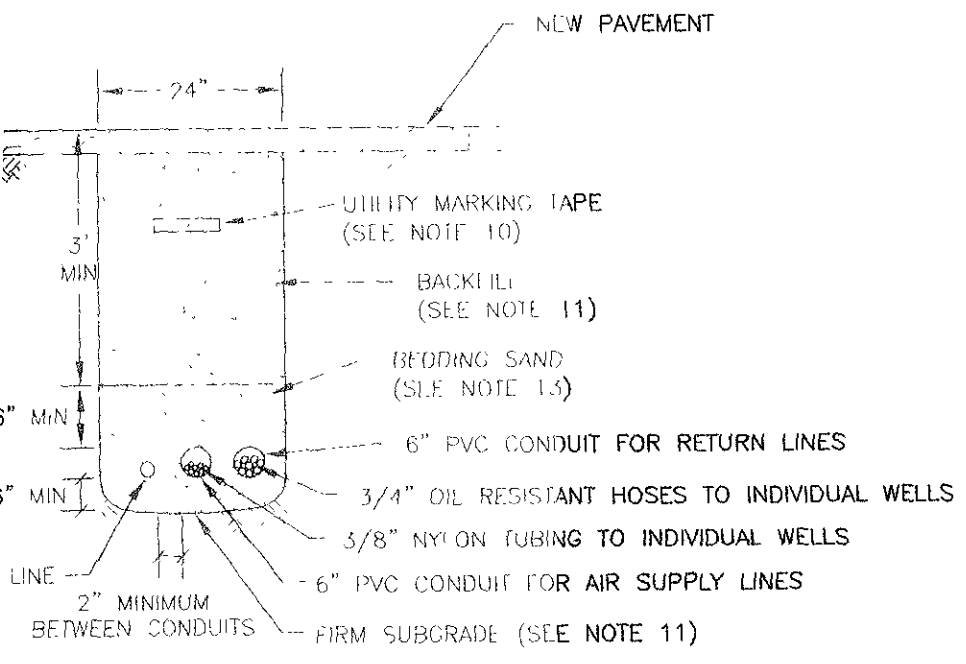


NOTES:

1. AN ALAMEDA COUNTY WATER DISTRICT WELL PERMIT APPLICATION MUST BE SUBMITTED AND APPROVED BY THE COUNTY PRIOR TO COMMENCING THE RECOVERY WELL INSTALLATION.
2. LOCATION AND DEPTH OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL CHECK AND VERIFY LOCATIONS OF ALL EXISTING UTILITIES BOTH UNDERGROUND AND OVERHEAD. NO EXCAVATION OR DRILLING SHALL BE DONE UNTIL ALL INVOLVED UTILITY COMPANIES ARE NOTIFIED 24-HOURS IN ADVANCE. ~~"UNDERGROUND SERVICE ALERT" POLICY PROCEDURE IS TO BE FOLLOWED.~~
3. MEDIUM PEA GRAVEL USED FOR THE BOTTOM TWO FEET OF THE BORING.
4. PEA GRAVEL SHALL CONSIST OF INERT BOUNDED GRAVEL WHERE 100 PERCENT OF THE MATERIAL PASSES THE 1/2-INCH SCREEN AND 90 PERCENT IS RETAINED ON THE 1/4-INCH SCREEN.
5. 90° JOINTS WERE USED WHERE PVC CONDUIT FOR AIR SUPPLY AND PRODUCT RETURN LINES LEFT THE MAIN TRENCH AND ENTERED RECOVERY WELL TRENCHES, HOWEVER, A SMOOTH TRANSITION WAS MAINTAINED. THE REST OF THE CONDUIT WAS BUILT WITH SWEEPING BENDS.
6. ALL POLYVINYL CHLORIDE PIPE (PVC) SHALL BE SCHEDULE 40. FITTINGS SHALL BE OF THE SAME MATERIAL AND SHALL BE OF THE SOLVENT-WELD TYPE.
7. BALL VALVES SHALL BE OF THE FULL PORT TYPE AND CONTAIN UNIONS ON BOTH ENDS SO THAT THE VALVE BODY CAN BE REMOVED FROM THE LINE WITHOUT BREAKING DOWN THE PIPING. THE UNIONS, IN TURN, SHALL BE SOLVENT-WELDED TO THE PVC PIPING. THE HANDLE SHALL BE EASILY REMOVABLE AND PARALLEL TO THE PIPING WHEN THE VALVE IS OPEN.
8. WHERE CHANGES IN SIZE OCCUR IN ANY AND ALL PIPING, REDUCING FITTINGS SHALL BE USED.
9. IN GENERAL, ALL PIPING CONNECTIONS TO EQUIPMENT SHALL BE PROVIDED WITH UNIONS. A SUFFICIENT NUMBER OF UNIONS SHALL BE USED TO ALLOW FOR THE DISMANTLING OF ALL PIPE, VALVES, AND EQUIPMENT.
10. DETECTABLE UTILITY MARKING TAPE SHALL BE BURIED 18 INCHES BELOW THE SURFACE DIRECTLY ABOVE THE CENTER CONDUIT.
11. SEE GEOTECHNICAL REPORT FOR COMPACTION REQUIREMENTS.
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IC AND INSTRUMENTATION


TO SCALE

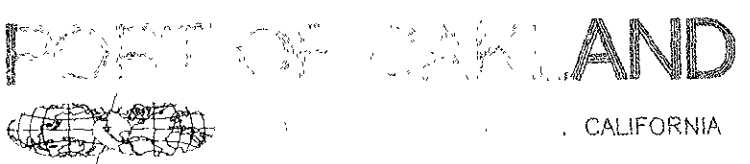


RW -1 WAS AN EXCEPTION. TOTAL DEPTH OF THE TRENCH WAS 3 FEET

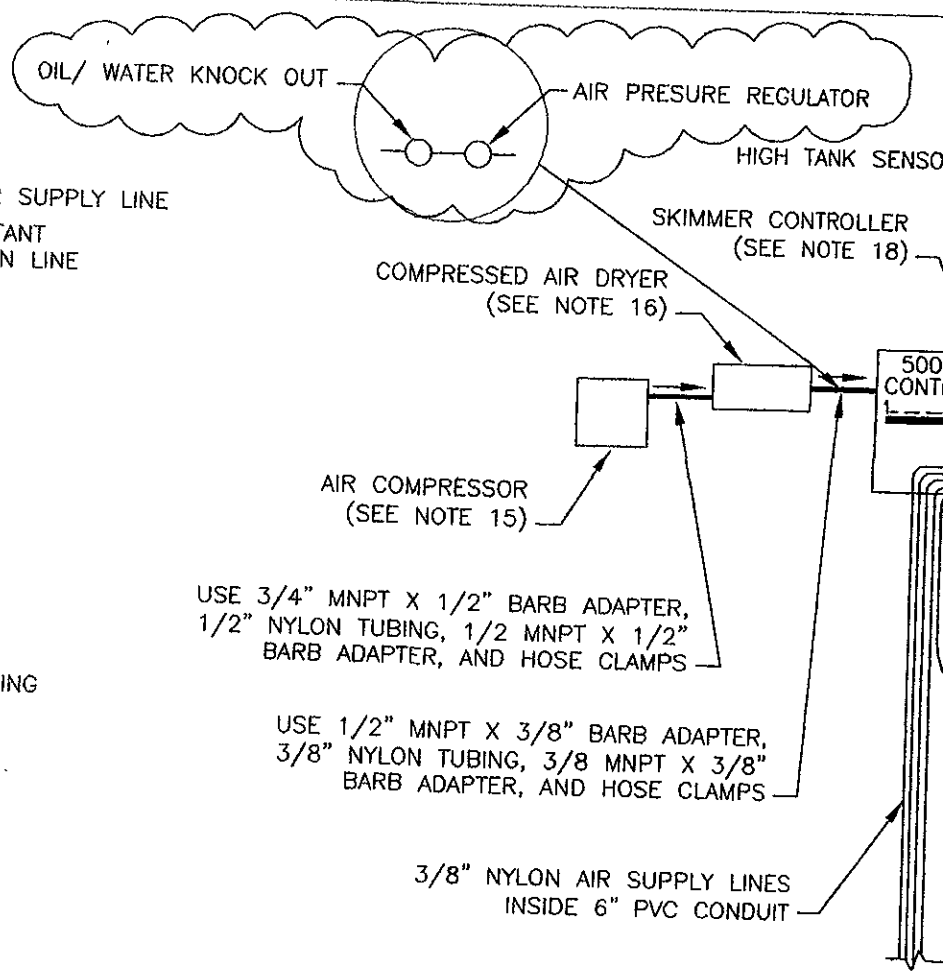
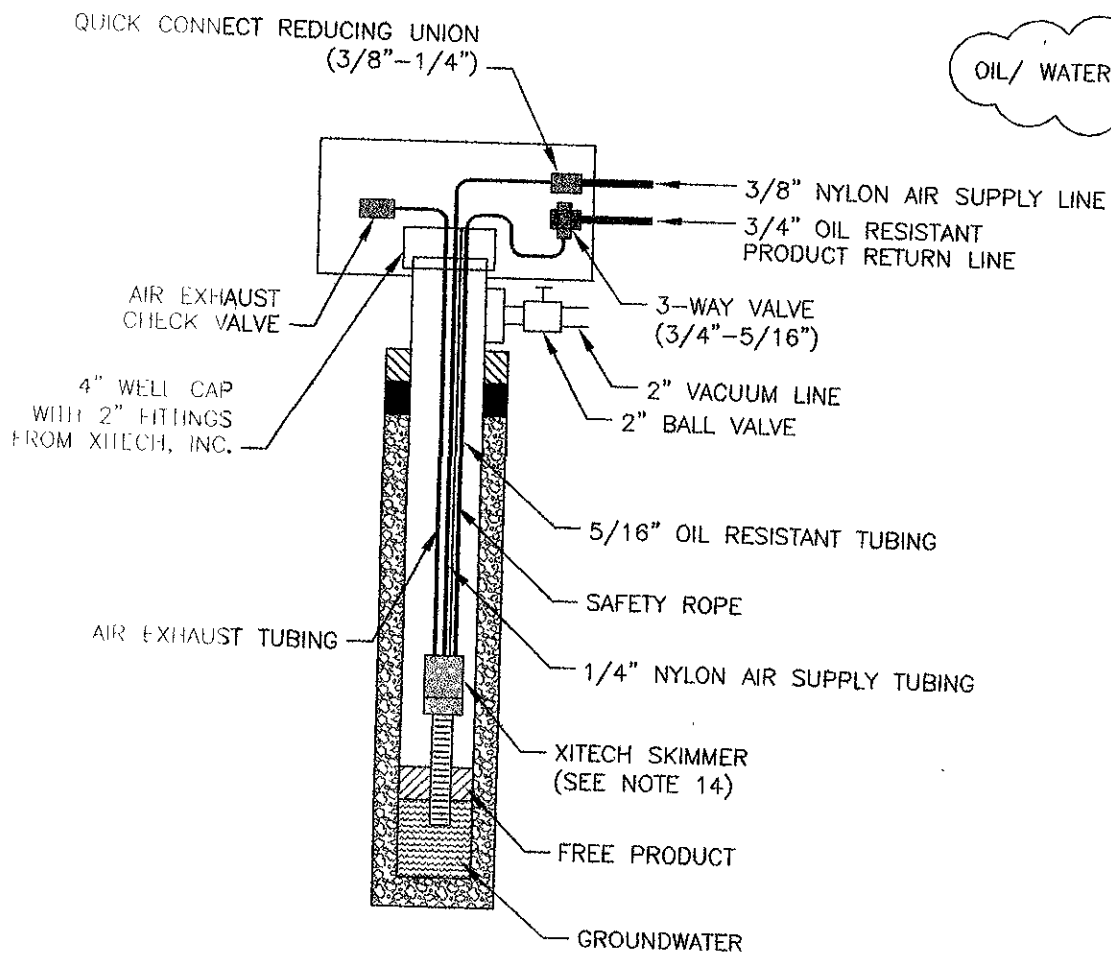
UTILITY TRENCH (TYP)

TO SCALE

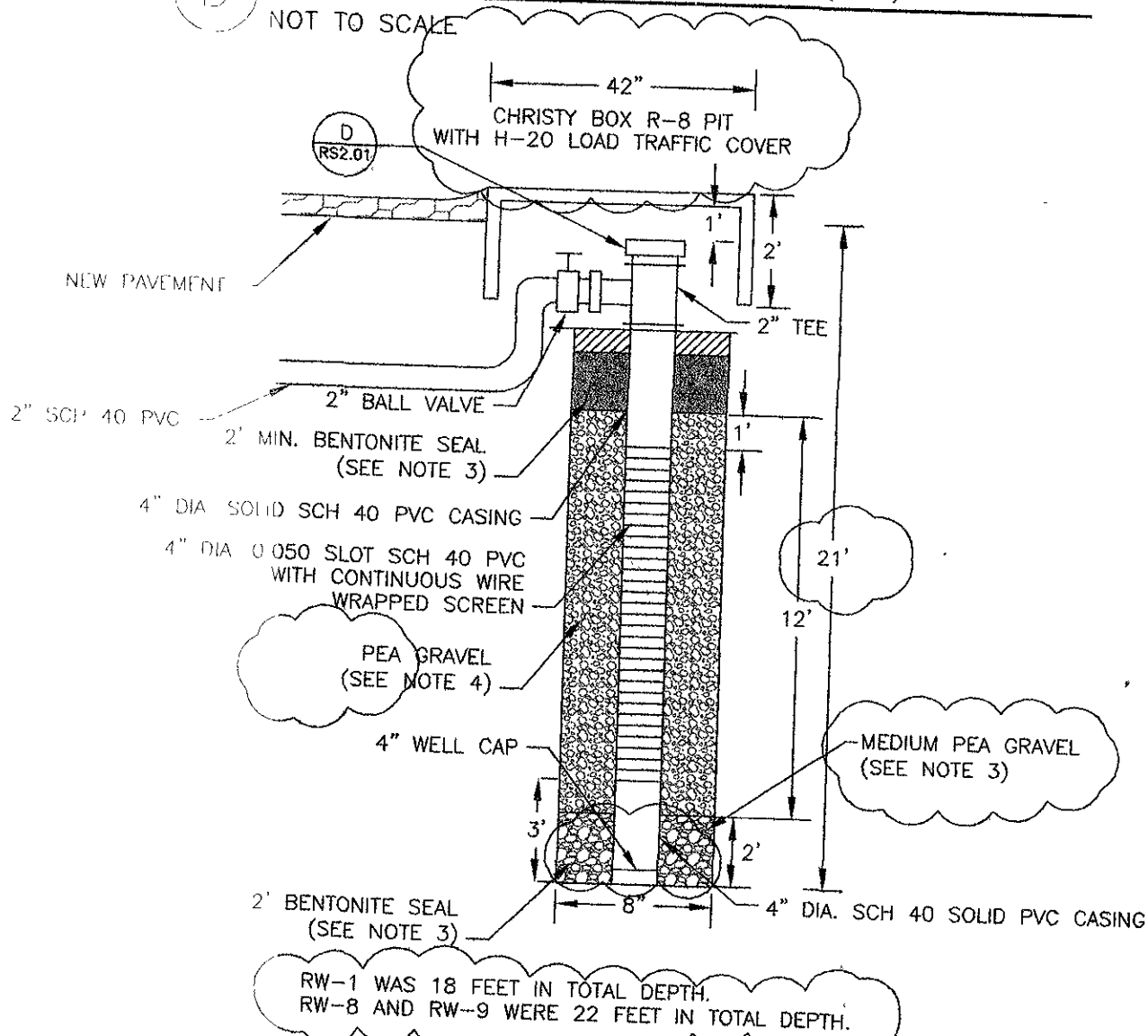
 Michael Willis Architects 471 Ninth Street Oakland, CA 94607 tel: (510) 287-9710	Treadwell & Rollo Environmental and Geotechnical Consultants 555 Montgomery Street, Suite 1300 San Francisco, California (415) 955-9040	DATE: 07/13/05
		SCALE:
MARITIME & 7TH STREET SITE		SHEET: 22-2 OF 203 SHEETS
HARBOR FACILITIES CENTER		RS2.01 AA-3827
FREE PRODUCT RECOVERY SYSTEM - DETAILS		



CHIEF ENGINEER	<i>Christina</i>	C 23297
APPROVED	<i>James D. DeLoe</i>	REG. ENGINEER NO. C 33213
RECOMMENDED	<i>Chris Chan</i>	REG. ENGINEER NO. C 43841

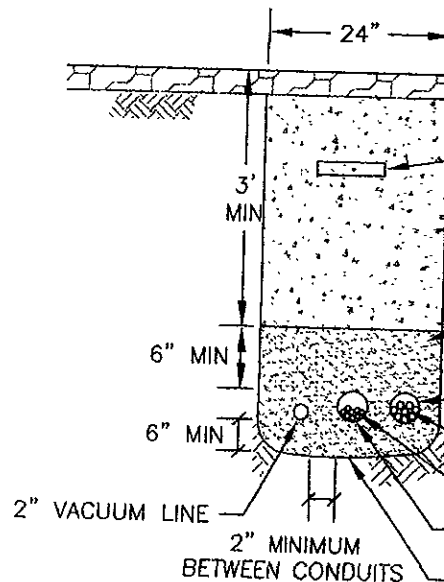


D RECOVERY WELL INSTRUMENTATION (TYP)
NOT TO SCALE



A RECOVERY WELL CONSTRUCTION (TYP)
NOT TO SCALE

C PIPING AND INSTRUMENTATION (TYP)
NOT TO SCALE



B UTILITY TRENCH (TYP)
NOT TO SCALE

4070.01 DETAILS 10/12 DWG

SEE REVISIONS
PLANS
FIELD BOOKS

*PORT OF OAKLAND DATUM
S 3.20' BELOW MEAN SEA LEVEL

CHECK TRACING FOR LATEST REVISIONS

REVISIONS			
NO	DESCRIPTION	DATE	APP'D
1	ADD FREE PRODUCT RECOVERY SYSTEM	07/05	

REVIEWED: _____
FACILITIES DEPARTMENT

REVIEWED: _____
CONSTRUCTION DEPARTMENT

REVIEWED: _____
PROJECT PLANNING DEPARTMENT

DRAWN: JMV

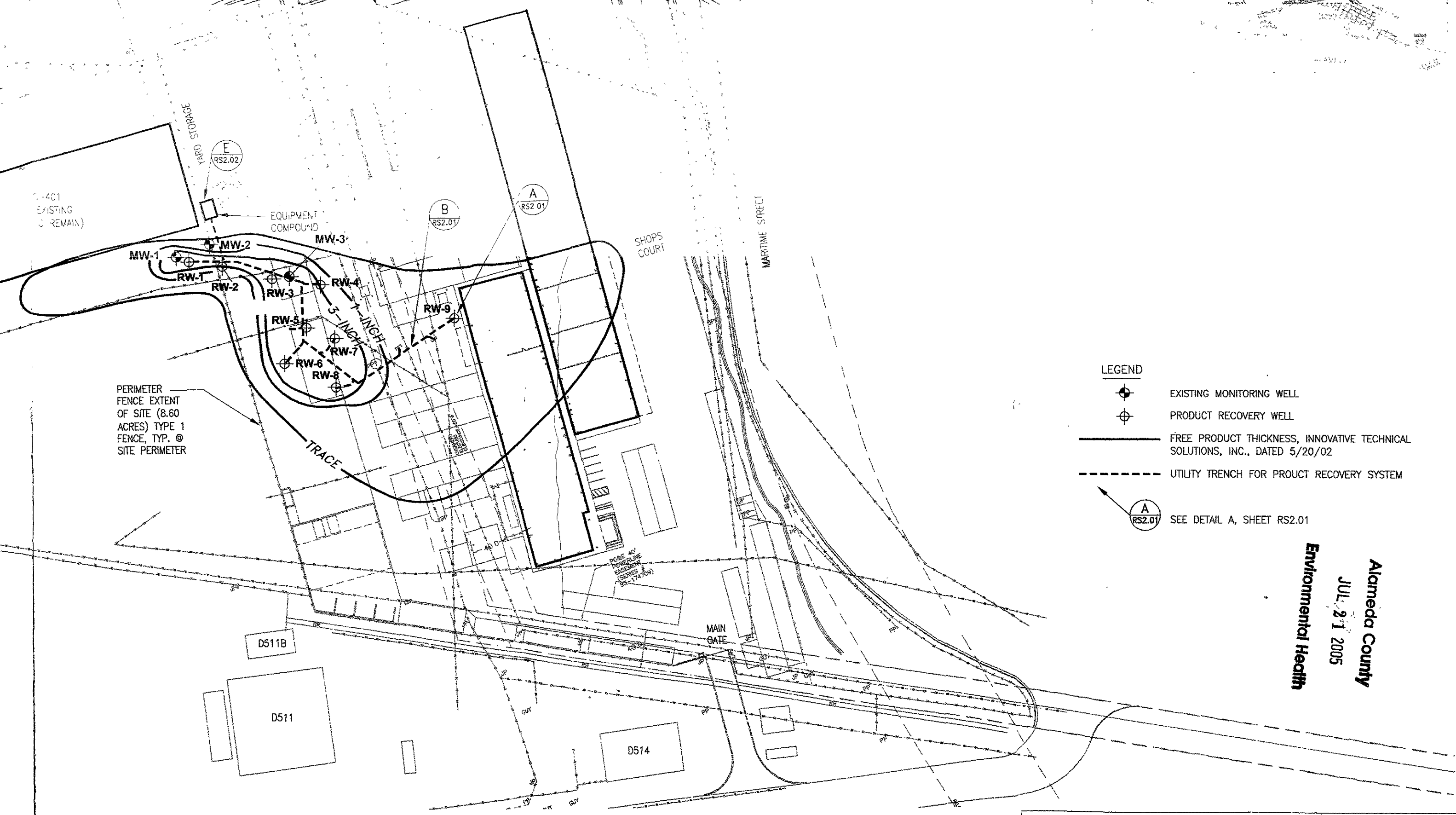
DESIGNED: BKM
REG. ENGINEER NO. C 57489

CHECKED: BKM
REG. ENGINEER NO. C 57489

REVIEWED: BKM
REG. ENGINEER NO. C 57489

PORT OF OAKLAND
530 WA

1" = 2' ORIGINAL SCALE



- LEGEND**
- EXISTING MONITORING WELL
 - PRODUCT RECOVERY WELL
 - FREE PRODUCT THICKNESS, INNOVATIVE TECHNICAL SOLUTIONS, INC., DATED 5/20/02
 - UTILITY TRENCH FOR PRODUCT RECOVERY SYSTEM
 - SEE DETAIL A, SHEET RS2.01

Alameda County
 JUL 21 2005
 Environmental Health

 Michael Willis Architects 471 Ninth Street Oakland, CA 94607 tel: (510) 287-9710	Treadwell & Rollo Environmental and Geotechnical Consultants 555 Montgomery Street, Suite 1300 San Francisco, California (415) 955-9040	
	MARITIME & 7TH STREET SITE	DATE: 07/13/05
HARBOR FACILITIES CENTER		SCALE:
FREE PRODUCT RECOVERY SYSTEM SITE PLAN		SHEET: 22-1 OF 203 SHEETS
RS1.01	AA-3827	

PORT OF OAKLAND

 530 WATER ST. OAKLAND, CALIFORNIA

CHIEF ENGINEER

 C 23297
 REG. ENGINEER NO.

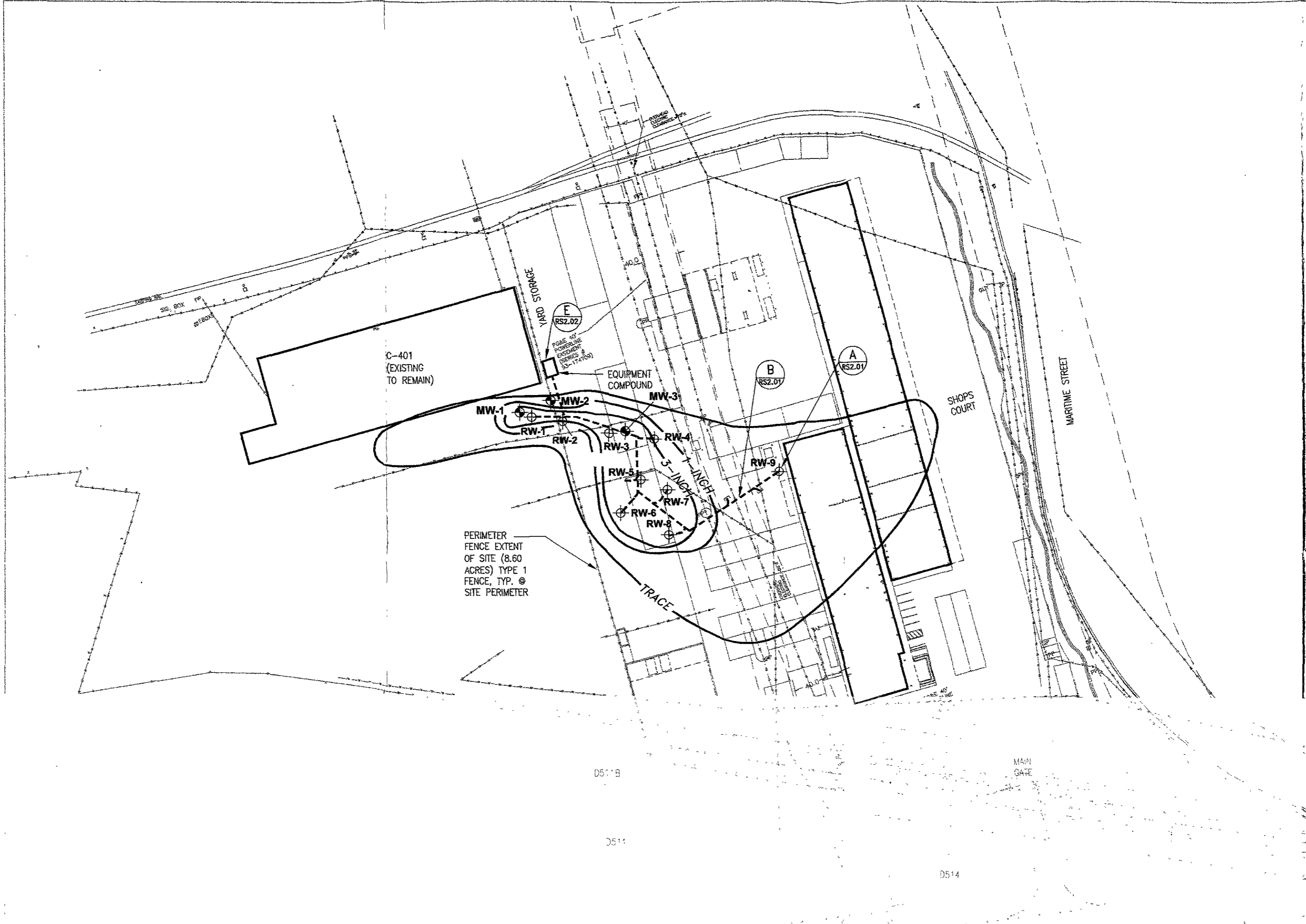
APPROVED

 C 33213
 REG. ENGINEER NO.

RECOMMENDED

 C 43841
 REG. ENGINEER NO.

REVIEWED	JMV	DRAWN
FACILITIES DEPARTMENT	BKM	DESIGNED
CONSTRUCTION DEPARTMENT	BKM	CHECKED
PROJECT PLANNING DEPARTMENT	BKM	REVIEWED
	C 57489	REG. ENGINEER NO.
	C 57489	REG. ENGINEER NO.
	C 57489	REG. ENGINEER NO.



C-401
(EXISTING
TO REMAIN)

YARD STORAGE

E
RS2.02

PG&E 457
POWERLINE
EXCISEMENT
SERIES #
93-174709

EQUIPMENT
COMPOUND

B
RS2.01

A
RS2.01

SHOPS
COURT

MARITIME STREET

MW-1

MW-2

MW-3

RW-1

RW-2

RW-3

RW-4

RW-9

RW-5

RW-6

RW-7

RW-8

PERIMETER
FENCE EXTENT
OF SITE (8.60
ACRES) TYPE 1
FENCE, TYP. @
SITE PERIMETER

TRACE

MAIN
GATE

D511B

D511

D514