



Bloomfield Refining
Company

A Gary-Williams Energy Corporation Subsidiary



ENTERED



Date: August 13, 1990

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To: File

From: Chris Hawley *CH*

Subject: INSTALLATION OF GROUNDWATER RECOVERY WELLS 14, 15, 16, 17, 18, & 19

Casing Material: Casing material for each well consisted of 4" (4.5" O.D.) fiberglass epoxy casing in two sections. The bottom section included a bottom plug, a two foot silt leg, 18 feet of recovery screen with 0.020" slots spaced for low/medium flow (1/4" between slots), 6 feet of blank, and a belled, female, threaded end. The upper section of casing included a male, threaded connection with an "O" ring. The internal fit-up was flush. This section was cut off as required.

The casing was provided by:
Enco-EMC
Geoff Hunkin
9620 - A Beck Circle
Austin, Texas 78758
(512) 834-9900

Drilling Method: Each well was drilled with an 8" bit and followed by a driven steel casing. Only air and some water, when required, was used to clear the hole. The driven steel casing kept the hole from collapsing in the gravel zone. The hole was completed into the top section of the Nacimiento formation. The steel casing was driven to at least the top of the Nacimiento.

Casing Installation: The 4" casing was set into the hole with the entire saturated zone included in the screened section. The silt legs were set into the Nacimiento and the top of the screened section was set well above the static water level. As the steel casing was withdrawn, 10/20 sand was added until sufficiently above the screened section. The recovery well was held in place as the steel casing was removed. After the sand pack was completed, the steel casing was removed completely. 40 pounds of bentonite and 100 pounds of concrete were used to plug the annular space around the casing and then backfilled to the surface with dirt.

The drilling and casing installations were done by:

Beeman Bros. Drilling
Leo Beeman
31502 Hwy 160
Durango, Colorado 81301
(303) 259-1195

Installation Schedule:	<u>START</u>	<u>COMPLETE</u>
MW-14	8/6/90	8/6/90
MW-15	8/6/90	8/7/90
MW-16	8/7/90	8/7/90
MW-17	8/7/90	8/7/90
MW-18	8/8/90	8/8/90
MW-19	8/8/90	8/8/90

Measurements: Approximate measurements were made during installation and then verified by Chris Hawley on August 9, 1990 with internal measurements. Drawings were immediately prepared.

Surface Seals: Adequate surface seals will be installed at a later date after the requirements for pumping are determined.

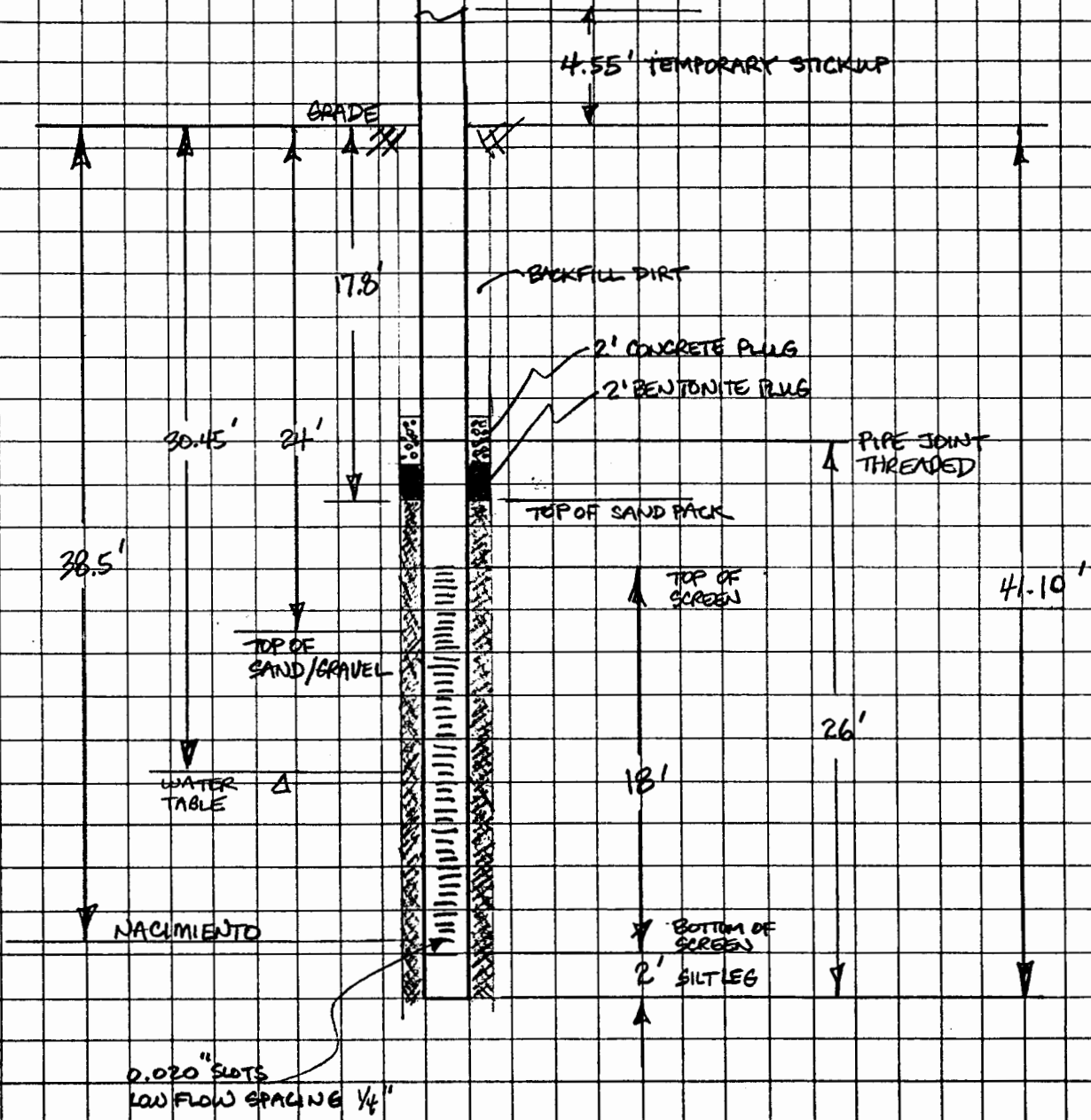
CH/cp

CALCULATION SHEET

R-114

CONSTRUCTION COMMENTS: DRILLED BY CASING DRIVER, 8" BIT; 4.5" O.D. FIBERGLASS CASING SET TO DEPTH INSIDE DRIVEN CASING; ANNULAR SPACE FILLED WITH 10/20 SAND AS DRIVEN CASING REMOVED; 50 LBS. OF BENTONITE DRILLING MUD & 100 LBS OF CONCRETE PLACED ON TOP OF SAND PACK; BACKFILLED WITH DIRT TO SURFACE.

LOCATION: END OF ROAD BETWEEN TANKS 13 & 29.

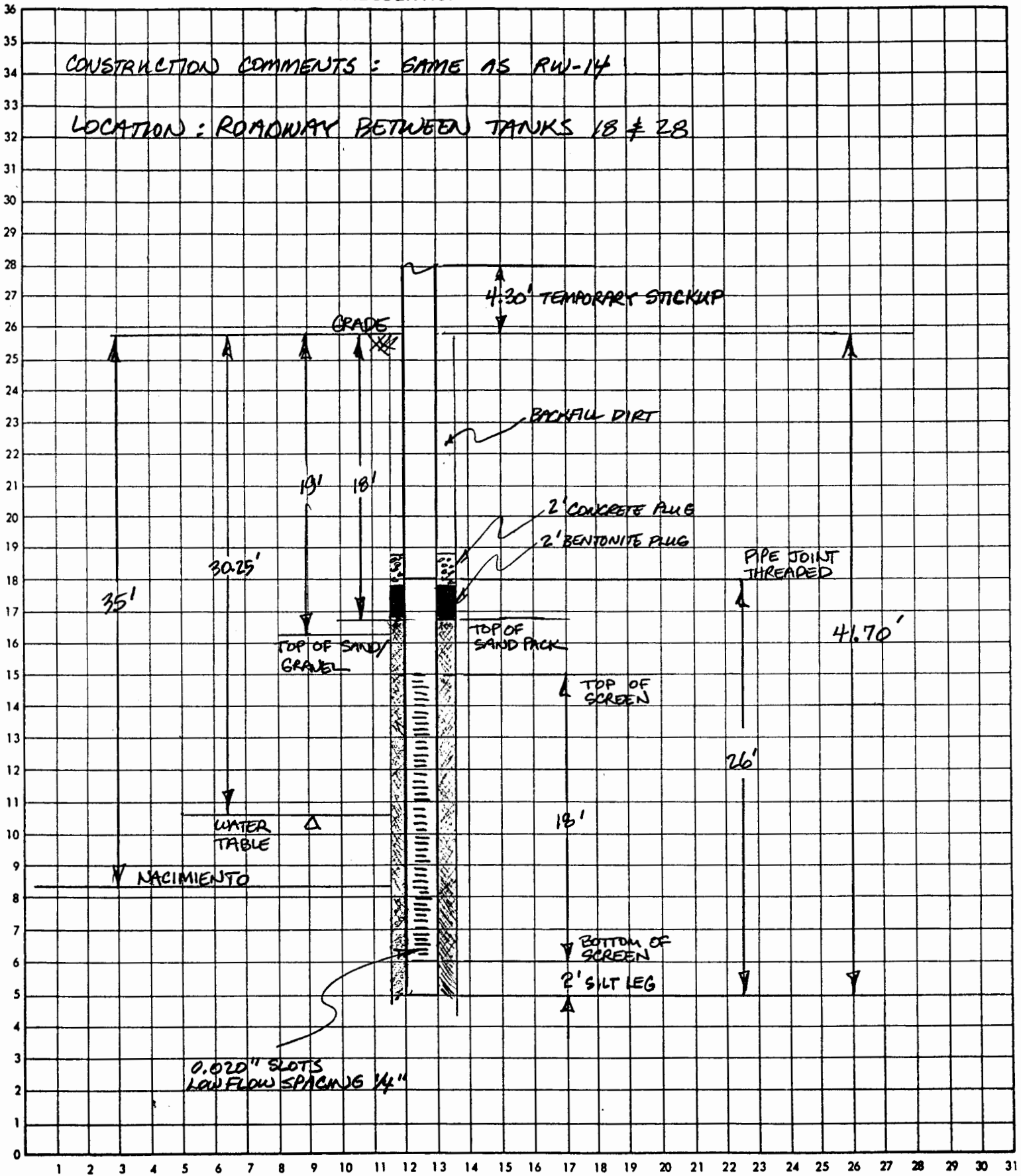


INITIALS LH PROJECT NO. GROUNDWATER RECOVERY - PHASE II, AFE 9146
 DATE 8-9-90 SUBJECT RECOVERY WELL 14
 DATE OF INSTALLATION: 8-6-90 SHEET 1 OF 6

CALCULATION SHEET

CONSTRUCTION COMMENTS: SAME AS RW-14

LOCATION: ROADWAY BETWEEN TANKS 18 & 28

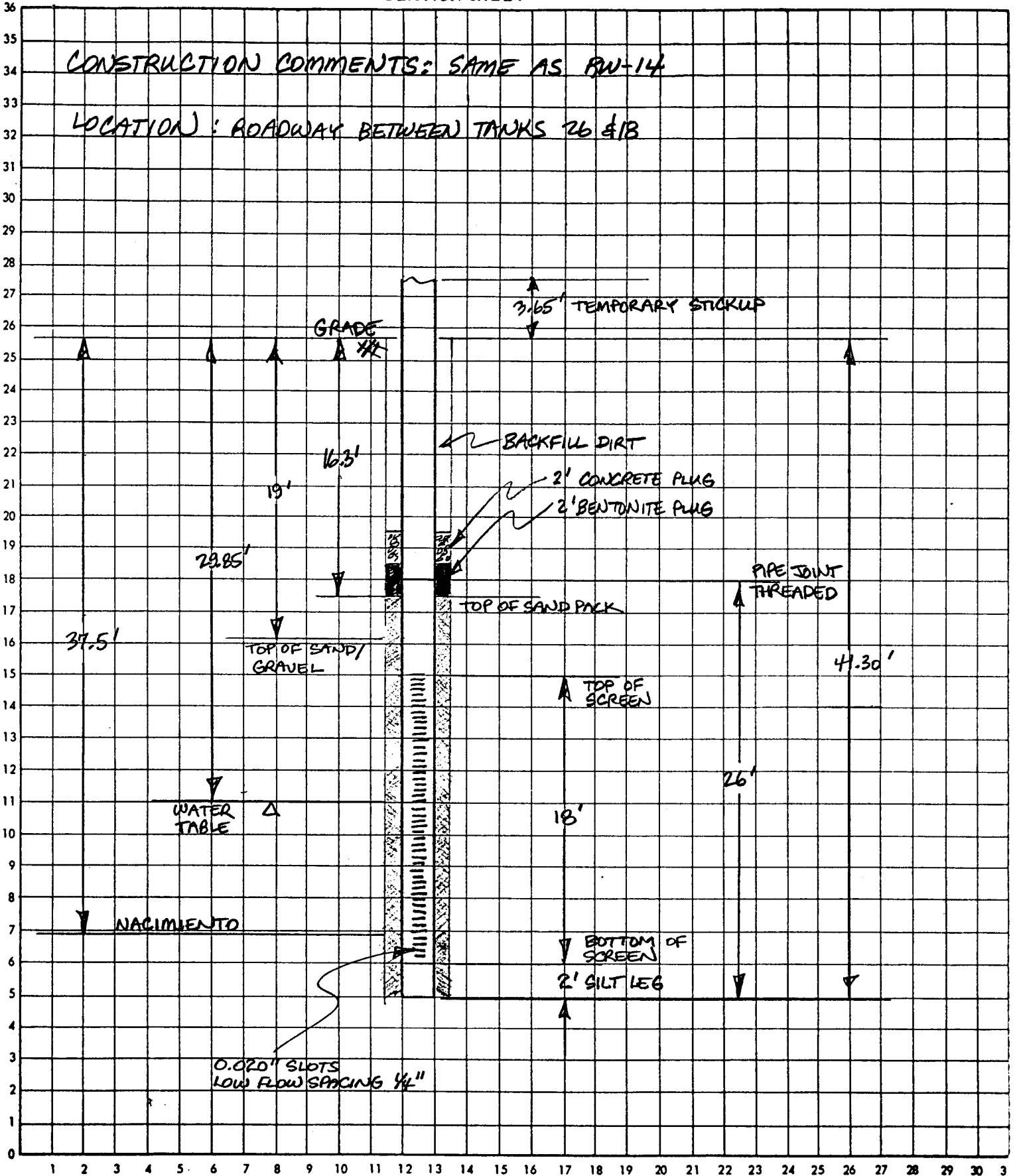


INITIALS CH PROJECT No. GROUNDWATER RECOVERY-PHASE II, AFE 9146
 DATE 8-9-90 SUBJECT RECOVERY WELL 15
 DATE OF INSTALLATION: 8-7-90 SHEET 2 OF 6

CALCULATION SHEET

CONSTRUCTION COMMENTS: SAME AS RW-14

LOCATION: ROADWAY BETWEEN TANKS 26 & 18

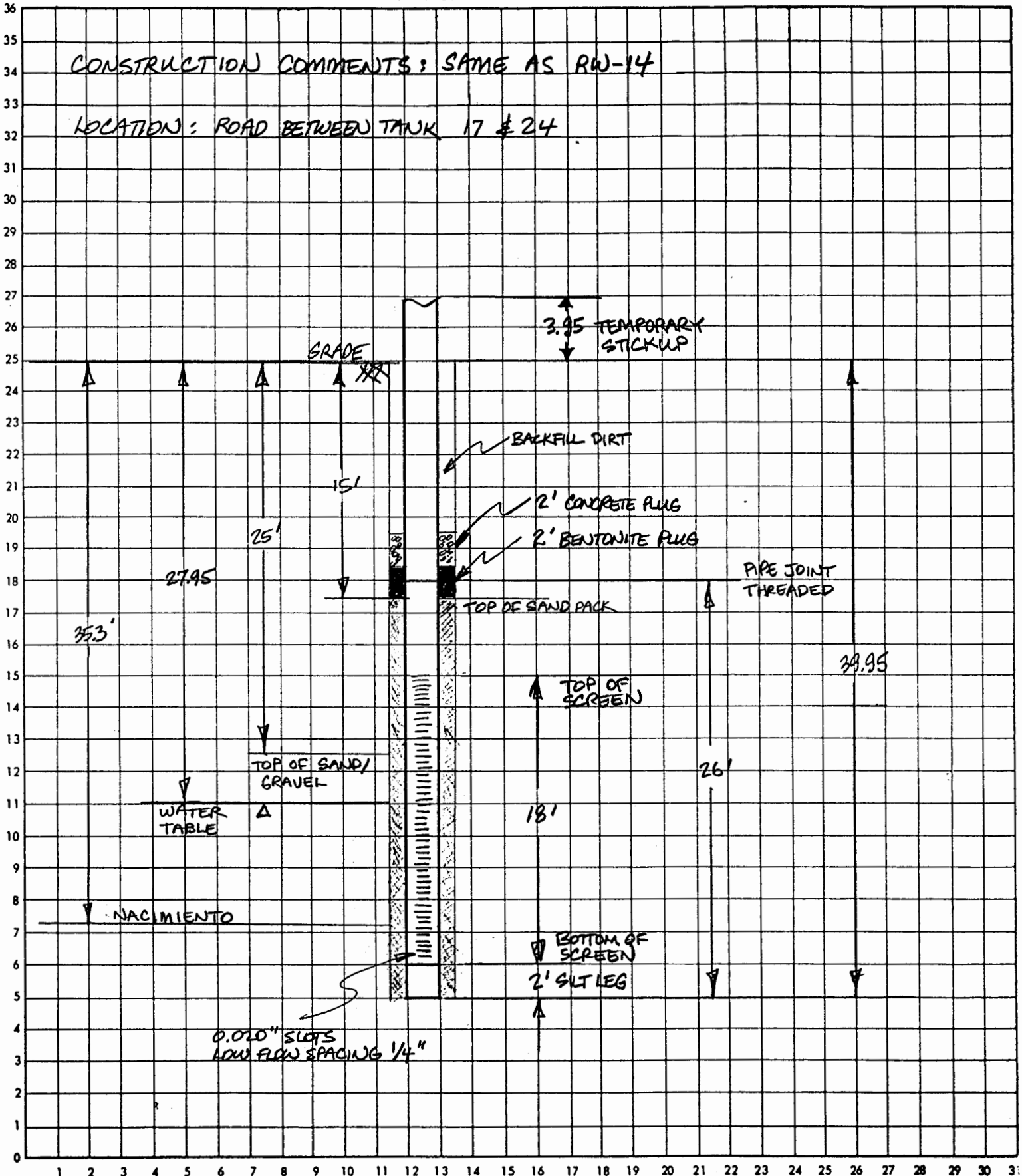


INITIALS GH PROJECT No. GROUNDWATER RECOVERY-PHASE II, AFE 9146
 DATE 8-9-90 SUBJECT RECOVERY WELL 16
 DATE OF INSTALLATION: 8-7-90 SHEET 3 OF 6

CALCULATION SHEET

CONSTRUCTION COMMENTS: SAME AS RW-14

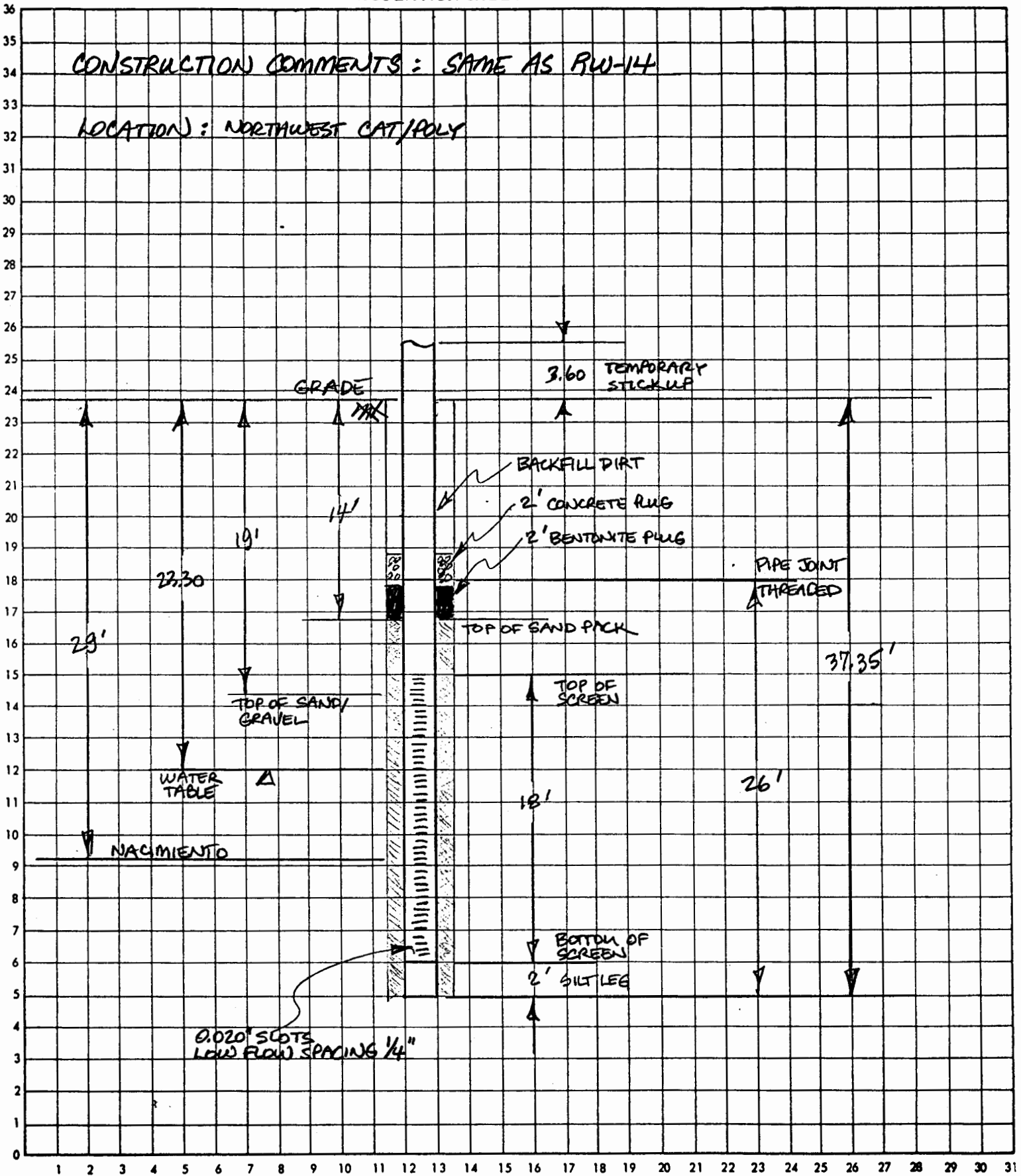
LOCATION: ROAD BETWEEN TANK 17 & 24



INITIALS CH PROJECT No. GROUNDWATER RECOVERY-PHASE II, AFE 9146
 DATE 8-9-90 SUBJECT RECOVERY WELL 17
 DATE OF INSTALLATION: 8-7-90 SHEET 4 OF 6

CONSTRUCTION COMMENTS: SAME AS RW-14

LOCATION: NORTHWEST CAT/POLY



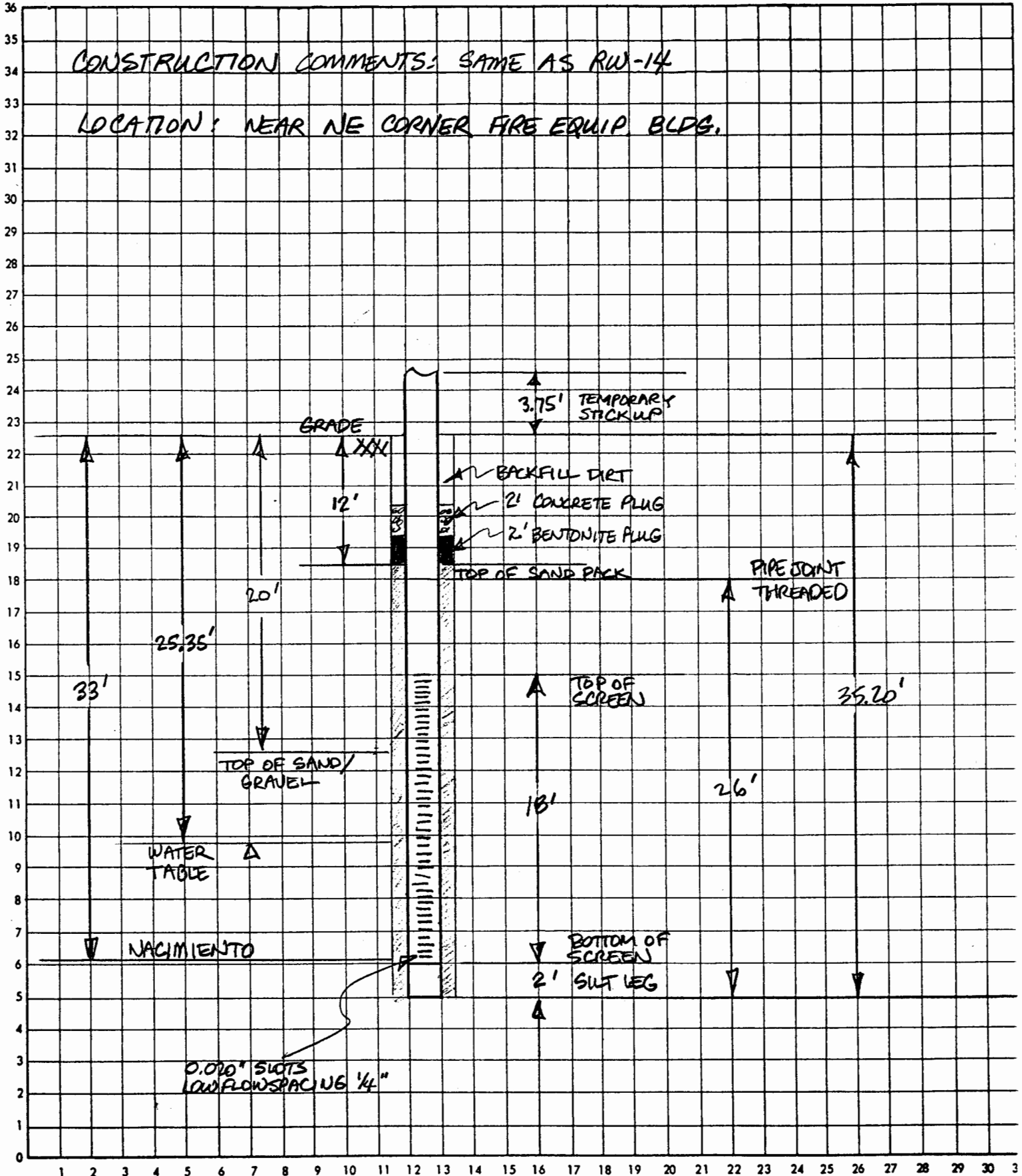
INITIALS CA PROJECT No. GROUNDWATER RECOVERY-PHASE II, AFE 9146
 DATE 8-9-90 SUBJECT RECOVERY WELL 18
 DATE OF INSTALLATION: 8-8-90 SHEET 5 OF 6

CALCULATION SHEET

RW-19

CONSTRUCTION COMMENTS: SAME AS RW-14

LOCATION: NEAR NE CORNER FIRE EQUIP. BLDG.



INITIALS CJA PROJECT No. GROUNDWATER RECOVERY - PHASE II, AFE 9146
 DATE 8-9-90 SUBJECT RECOVERY WELL 19
 DATE OF INSTALLATION: 8-8-90 SHEET 6 OF 6