CITY OF OROVILLE

OROVILLE MUNICIPAL AIRPORT

OROVILLE, CALIFORNIA

CONSTRUCTION PLANS FOR:

RUNWAY 2-20 DRAINAGE IMPROVEMENT AND RUNWAY 20 SAFETY AREA GRADING

A.I.P. NO. 3-06-0178-__

MARCH 2016

SHEET INDEX

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3 DRAINLINE PLAN & PROFILE
4 DRAINAGE DETAILS
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6 DISPOSAL GRADING PLAN

CITY OF OROVILLE:

APPROVED: _____ **DATE:** _____
Don Rust
Director of Public Works

APPROVED: _____ **DATE:** _____

DESIGNED BY :

Reinard W. Brandley
CONSULTING AIRPORT ENGINEER
6125 King Road, Suite 201 · Loomis, California 95650 · (916) 652-4725

March 2, 2016

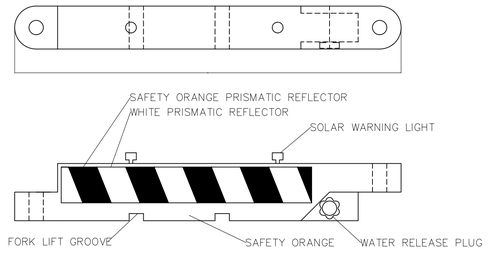
DESIGN ENGINEER C.E. 66558 DATE

REGISTERED PROFESSIONAL ENGINEER REINARD W. BRANDLEY CIVIL STATE OF CALIFORNIA

SET NO.

NOTES:

1. BARRICADES SHALL BE PLASTIC WATER–FILLED LIGHTED BARRICADES. CROWDSTOPPER WATERCADE WC01–10 10" HIGH OR APPROVED EQUAL.
2. EACH BARRICADE SHALL HAVE 2 SOLAR–POWERED LIGHTS WITH RED LENSES EACH CONTROLLED BY PHOTOCELLS SUCH THAT THEY ARE ON AT NIGHT AND OFF BY DAY.
3. BARRICADES SHALL BE SECURED IF NECESSARY TO RESIST MOVEMENT FROM JET BLAST OR PROP BLAST.
4. AT THE COMPLETION OF CONSTRUCTION, ALL BARRICADES SHALL BE DRAINED OF WATER, DELIVERED TO THE AIRPORT MAINTENANCE BUILDING, AND OWNERSHIP OF THE BARRICADES AND LIGHTS TRANSFERRED TO THE TAHOE–TRUCKEE AIRPORT DISTRICT.



10" WATER–FILLED BARRICADE

NO SCALE

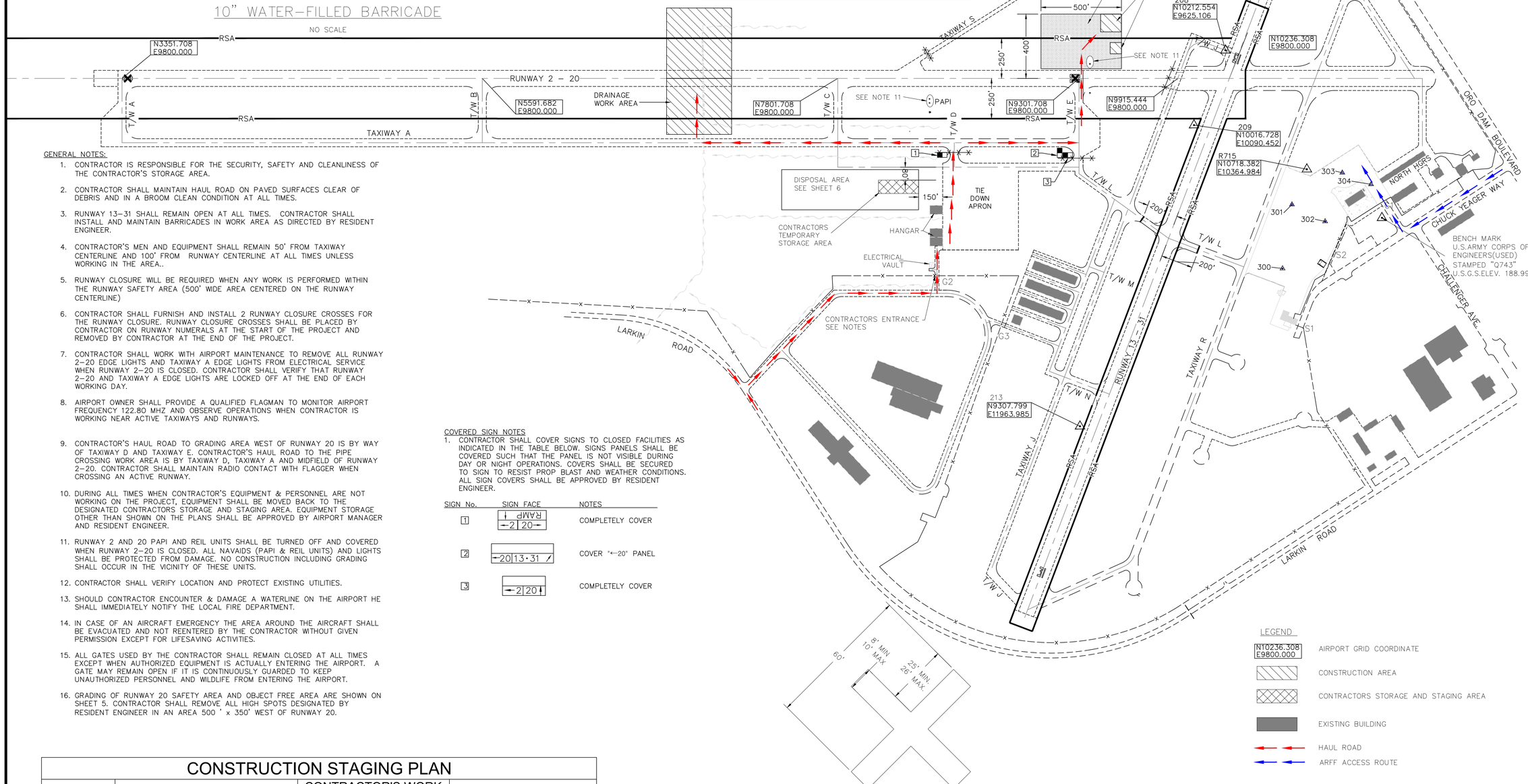
OROVILLE AIRPORT CONTROL POINTS

CONTROL POINT	NORTHING	EASTING	ELEVATION (FT.)	DESCRIPTION
208	10212.554	9625.106	190.38	PK W/TIN
209	10016.728	10090.452	190.66	HUB & TACK
213	9307.799	11963.985	175.15	HUB & TACK
Q743	11185.213	10667.039	189.00	BENCHMARK
R715	10718.382	10364.984	190.002	BENCHMARK

NGVD 29 DATUM

NORTH APRON CONTROL POINTS

CONTROL POINT	NORTHING	EASTING	ELEVATION (FT.)	DESCRIPTION
300	10567.1948	10982.4959	184.19	SET MAG NAIL
301	10625.7369	10584.6593	188.35	SET MAG NAIL
302	10831.9096	10689.6593	188.67	SET MAG NAIL
303	10938.7162	10386.5727	191.09	SET MAG NAIL
304	11117.4802	10458.7045	191.13	SET MAG NAIL



GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR THE SECURITY, SAFETY AND CLEANLINESS OF THE CONTRACTOR'S STORAGE AREA.
2. CONTRACTOR SHALL MAINTAIN HAUL ROAD ON PAVED SURFACES CLEAR OF DEBRIS AND IN A BROOM CLEAN CONDITION AT ALL TIMES.
3. RUNWAY 13–31 SHALL REMAIN OPEN AT ALL TIMES. CONTRACTOR SHALL INSTALL AND MAINTAIN BARRICADES IN WORK AREA AS DIRECTED BY RESIDENT ENGINEER.
4. CONTRACTOR'S MEN AND EQUIPMENT SHALL REMAIN 50' FROM TAXIWAY CENTERLINE AND 100' FROM RUNWAY CENTERLINE AT ALL TIMES UNLESS WORKING IN THE AREA..
5. RUNWAY CLOSURE WILL BE REQUIRED WHEN ANY WORK IS PERFORMED WITHIN THE RUNWAY SAFETY AREA (500' WIDE AREA CENTERED ON THE RUNWAY CENTERLINE)
6. CONTRACTOR SHALL FURNISH AND INSTALL 2 RUNWAY CLOSURE CROSSES FOR THE RUNWAY CLOSURE. RUNWAY CLOSURE CROSSES SHALL BE PLACED BY CONTRACTOR ON RUNWAY NUMERALS AT THE START OF THE PROJECT AND REMOVED BY CONTRACTOR AT THE END OF THE PROJECT.
7. CONTRACTOR SHALL WORK WITH AIRPORT MAINTENANCE TO REMOVE ALL RUNWAY 2–20 EDGE LIGHTS AND TAXIWAY A EDGE LIGHTS FROM ELECTRICAL SERVICE WHEN RUNWAY 2–20 IS CLOSED. CONTRACTOR SHALL VERIFY THAT RUNWAY 2–20 AND TAXIWAY A EDGE LIGHTS ARE LOCKED OFF AT THE END OF EACH WORKING DAY.
8. AIRPORT OWNER SHALL PROVIDE A QUALIFIED FLAGMAN TO MONITOR AIRPORT FREQUENCY 122.80 MHZ AND OBSERVE OPERATIONS WHEN CONTRACTOR IS WORKING NEAR ACTIVE TAXIWAYS AND RUNWAYS.
9. CONTRACTOR'S HAUL ROAD TO GRADING AREA WEST OF RUNWAY 20 IS BY WAY OF TAXIWAY D AND TAXIWAY E. CONTRACTOR'S HAUL ROAD TO THE PIPE CROSSING WORK AREA IS BY TAXIWAY D, TAXIWAY A AND MIDFIELD OF RUNWAY 2–20. CONTRACTOR SHALL MAINTAIN RADIO CONTACT WITH FLAGGER WHEN CROSSING AN ACTIVE RUNWAY.
10. DURING ALL TIMES WHEN CONTRACTOR'S EQUIPMENT & PERSONNEL ARE NOT WORKING ON THE PROJECT, EQUIPMENT SHALL BE MOVED BACK TO THE DESIGNATED CONTRACTORS STORAGE AND STAGING AREA. EQUIPMENT STORAGE OTHER THAN SHOWN ON THE PLANS SHALL BE APPROVED BY AIRPORT MANAGER AND RESIDENT ENGINEER.
11. RUNWAY 2 AND 20 PAPI AND REIL UNITS SHALL BE TURNED OFF AND COVERED WHEN RUNWAY 2–20 IS CLOSED. ALL NAVAIDS (PAPI & REIL UNITS) AND LIGHTS SHALL BE PROTECTED FROM DAMAGE. NO CONSTRUCTION INCLUDING GRADING SHALL OCCUR IN THE VICINITY OF THESE UNITS.
12. CONTRACTOR SHALL VERIFY LOCATION AND PROTECT EXISTING UTILITIES.
13. SHOULD CONTRACTOR ENCOUNTER & DAMAGE A WATERLINE ON THE AIRPORT HE SHALL IMMEDIATELY NOTIFY THE LOCAL FIRE DEPARTMENT.
14. IN CASE OF AN AIRCRAFT EMERGENCY THE AREA AROUND THE AIRCRAFT SHALL BE EVACUATED AND NOT REENTERED BY THE CONTRACTOR WITHOUT GIVEN PERMISSION EXCEPT FOR LIFESAVING ACTIVITIES.
15. ALL GATES USED BY THE CONTRACTOR SHALL REMAIN CLOSED AT ALL TIMES EXCEPT WHEN AUTHORIZED EQUIPMENT IS ACTUALLY ENTERING THE AIRPORT. A GATE MAY REMAIN OPEN IF IT IS CONTINUOUSLY GUARDED TO KEEP UNAUTHORIZED PERSONNEL AND WILDLIFE FROM ENTERING THE AIRPORT.
16. GRADING OF RUNWAY 20 SAFETY AREA AND OBJECT FREE AREA ARE SHOWN ON SHEET 5. CONTRACTOR SHALL REMOVE ALL HIGH SPOTS DESIGNATED BY RESIDENT ENGINEER IN AN AREA 500 ' x 350' WEST OF RUNWAY 20.

COVERED SIGN NOTES

1. CONTRACTOR SHALL COVER SIGNS TO CLOSED FACILITIES AS INDICATED IN THE TABLE BELOW. SIGNS PANELS SHALL BE COVERED SUCH THAT THE PANEL IS NOT VISIBLE DURING DAY OR NIGHT OPERATIONS. COVERS SHALL BE SECURED TO SIGN TO RESIST PROP BLAST AND WEATHER CONDITIONS. ALL SIGN COVERS SHALL BE APPROVED BY RESIDENT ENGINEER.

SIGN No.	SIGN FACE	NOTES
1	RAMP ← 2 20 →	COMPLETELY COVER
2	→ 20 13 • 31 /	COVER "←20" PANEL
3	→ 2 20 ↑	COMPLETELY COVER

CONSTRUCTION STAGING PLAN

STAGE	CONTRACTOR'S WORK	CONTRACTOR'S WORK AREA	FACILITY CLOSURE
1-1	RUNWAY 2-20 DRAINAGE IMPROVEMENTS	RUNWAY 2-20	RUNWAY 2-20, TAXIWAY A, B, C, D AND E
1-2	RUNWAY 20 OBSTRUCTION REMOVAL	WEST SIDE OF RUNWAY 20 THRESHOLD	RUNWAY 2-20, TAXIWAY A, B, C, D AND E

CLOSED RUNWAY CROSS NOTES:

1. CROSS SHALL BE AVIATION YELLOW IN COLOR.
2. CROSSES TO BE CONSTRUCTED OF ANY MATERIAL SUCH AS FABRIC, PLYWOOD, OR OTHER SUITABLE MATERIAL. THEY WILL BE HELD IN PLACE IN A MANNER APPROVED BY THE RESIDENT ENGINEER.
3. CONTRACTOR SHALL PLACE AIRPORT FURNISHED CROSSES ON ON EACH END OF THE CLOSED RUNWAY. CROSSES SHALL REMAIN ON RUNWAY AT ALL TIMES THAT WORK IS PERFORMED ON THE RUNWAY. NO WORK SHALL BEGIN ON RUNWAY UNTIL CROSSES HAVE BEEN INSTALLED AND ANCHORED.

CLOSED RUNWAY CROSS DETAIL

LEGEND

- N10236.308 E9800.000 — AIRPORT GRID COORDINATE
- CONSTRUCTION AREA
- CONTRACTORS STORAGE AND STAGING AREA
- EXISTING BUILDING
- HAUL ROAD
- ARFF ACCESS ROUTE
- CONSTRUCTION BARRICADE FOR ASSOCIATED STAGE
- EXISTING DRAINAGE DITCH
- EXISTING FENCE
- G1 S2 — EXISTING GATE IDENTIFICATION NUMBER
- EXISTING CONTROL POINTS
- RSA — EXISTING RUNWAY SAFETY AREA

Reinard W. Brandley
CONSULTING AIRPORT ENGINEER
6125 King Road, Suite 201 · Loomis, California 95650 · (916) 652-4725

ENGINEER OF RECORD

REGISTERED PROFESSIONAL ENGINEER R. W. BRANDLEY 1416 CIVIL STATE OF CALIFORNIA

No.	REVISIONS	BY	APR	DATE

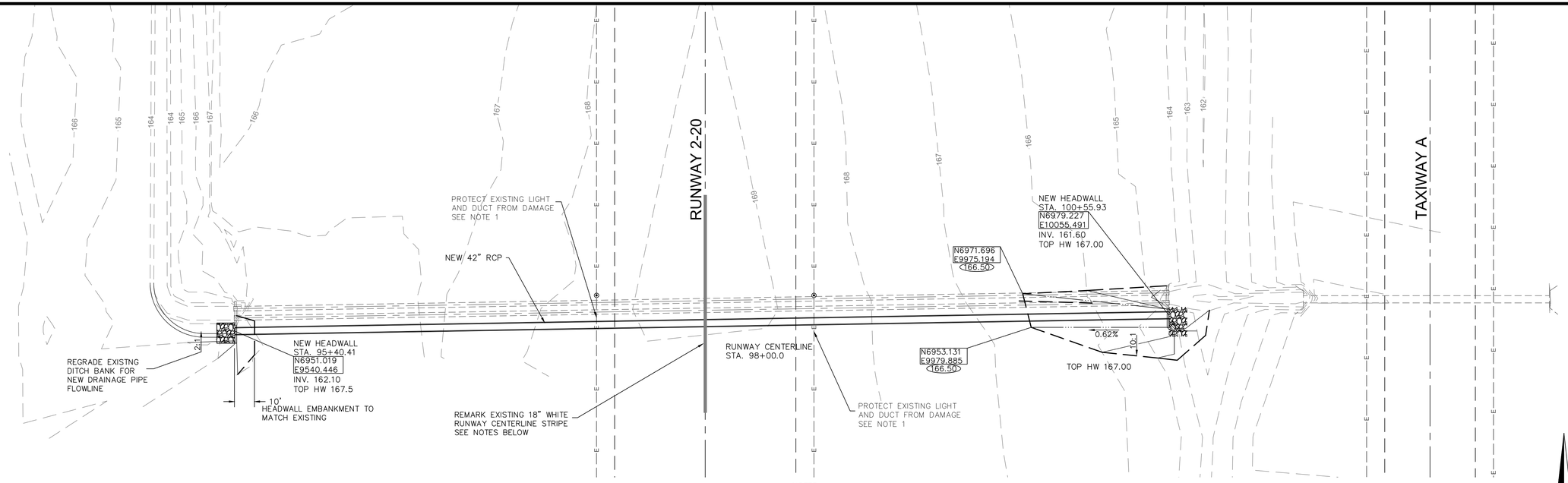
OROVILLE MUNICIPAL AIRPORT
OROVILLE CALIFORNIA

RUNWAY 2-20 GRADING AND DRAINAGE IMPROVEMENTS

CONSTRUCTION STAGING AND SAFETY PLAN

DATE	3/2/2016
DRAWN	KDC
CHECKED	RWB
PROJECT No.	13.12
FILE	1312.02.CSP TRENCH
SCALE	1"=300'
SHEET No.	2 OF 6

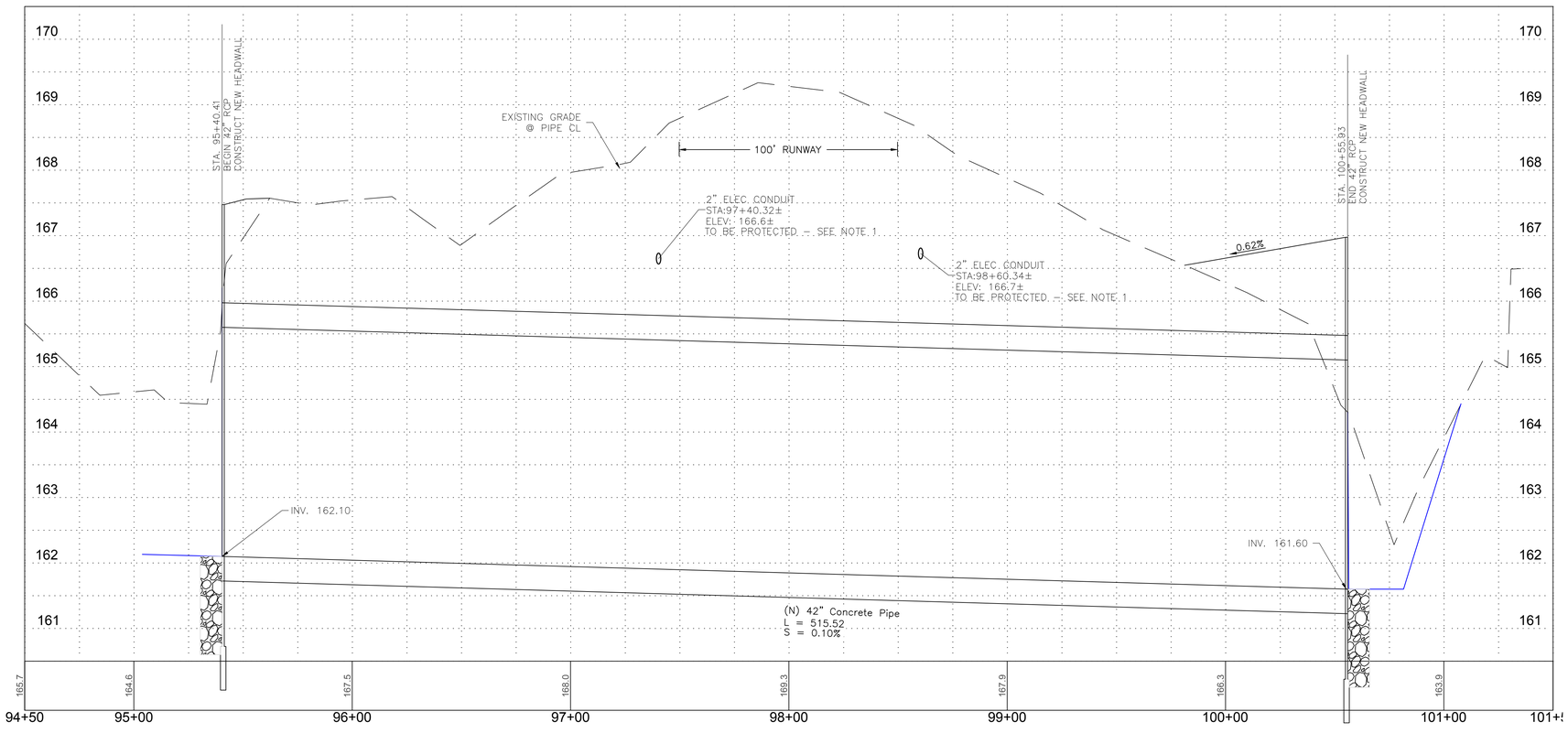
G:\13\12 GRADE & DRAIN\1312.02.CSP TRENCH.DWG PLOTTED BY Tom Steinkamp 3/3/2016 1:31 PM



PLAN VIEW

NOTES:

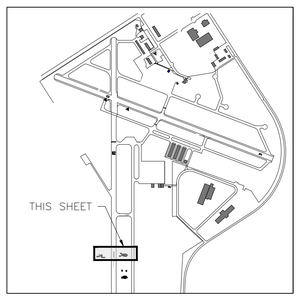
1. EXISTING 2" SCH 40 ELECTRICAL DUCT ON EACH SIDE RUNWAY 2-20 SHALL BE PROTECTED. IF THE CONTRACTOR DAMAGES THE EXISTING DUCT, THEY SHALL AT THEIR EXPENSE REMOVE AND REPAIR ALL DAMAGED DUCT, REMOVE EXISTING CABLE AND CONNECTOR KITS FROM TOTAL AREA BETWEEN LIGHTS ON EACH SIDE OF DAMAGED DUCT, MANDREL THE DUCT BETWEEN ADJACENT RUNWAY LIGHTS, FURNISH AND INSTALL NEW CABLE AND CONNECTOR KITS BETWEEN ADJACENT RUNWAY LIGHT BASES.
2. CONTRACTOR SHALL SAW CUT EXISTING AC AT EDGE OF DRAINAGE PIPE TRENCH WITH INITIAL CUT AND FINAL SAW CUT AT EDGE OF 10' PAVING LANE. SEE DETAILS ON SHEET 4.
3. CONTRACTOR SHALL REMARK EXISTING RUNWAY CENTERLINE STRIP AT NEW DRAINLINE CROSSING. EXISTING CENTERLINE STRIPE SHALL BE REMARKED FULL LENGTH. 2 COATS OF PAINT ON THE NEW PAVEMENT AREA AND 1 COAT ON THE EXISTING MARKING. REFLECTIVE BEADS SHALL BE SPREAD IN THE FINAL COAT ONLY.



DRAIN LINE PROFILE

LEGEND

N9738.46 E13727.35	AIRPORT GRID COORDINATE
	CENTERLINE
	NEW EDGE OF PAVEMENT
	EX EDGE OF PAVEMENT
	EX UNDERGROUND ELECTRICAL
167	EXISTING CONTOUR
	NEW STORM DRAIN
	EXISTING STORM DRAIN



LOCATION MAP

Reinard W. Brandley
CONSULTING AIRPORT ENGINEER
6125 King Road, Suite 201 · Loomis, California 95650 · (916) 652-4725

ENGINEER OF RECORD

REGISTERED PROFESSIONAL ENGINEER REINARD W. BRANDLEY No. 13727 CIVIL STATE OF CALIFORNIA 3/2/2016

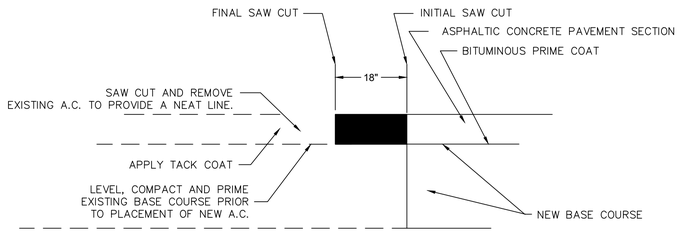
No.	REVISIONS	BY	APR	DATE

OROVILLE MUNICIPAL AIRPORT
OROVILLE CALIFORNIA

RUNWAY 2-20 GRADING AND DRAINAGE IMPROVEMENTS
DRAINLINE PLAN & PROFILE

DATE	3/2/2016
DRAWN	KDC
CHECKED	DB
PROJECT No.	13.12
FILE	1312.03.PP-DRAIN
SCALE	1"=30'
SHEET No.	3 OF 6

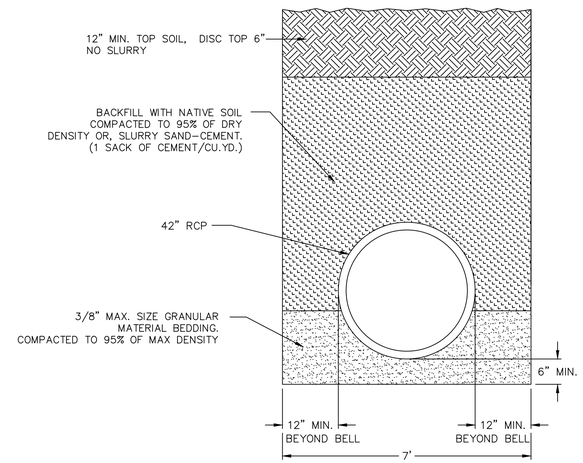
G:\13\12 GRADE & DRAIN\1312.03.PP-DRAIN.DWG PLOTTED BY Tom Steinkamp 3/3/2016 1:31 PM



MATCH EXISTING PAVEMENT DETAIL

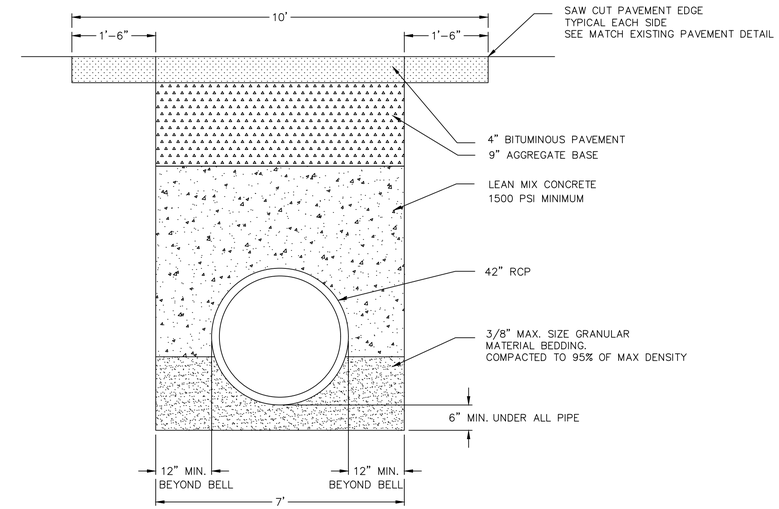
NO SCALE

1. REMOVAL OF EXISTING A.C. BEYOND PIPE TRENCH SHALL NOT OCCUR UNTIL THE PLACEMENT OF NEW BASE COURSE HAS BEEN COMPLETED.
2. CONTRACTOR SHALL PROTECT SAW CUT FACE FROM DAMAGE. DAMAGED AREAS SHALL BE SAW CUT MAINTAINING A CONTINUOUS STRAIGHT EDGE AT THE CONTRACTORS EXPENSE.



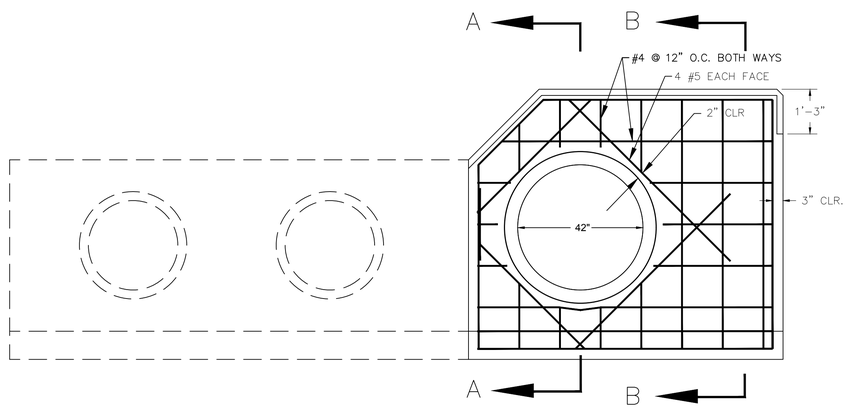
TYPICAL PIPE TRENCH DETAIL
12' BEYOND PAVEMENT

NO SCALE

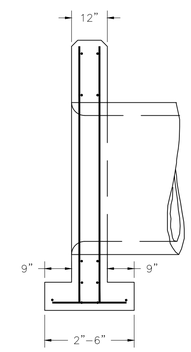


TYPICAL PIPE TRENCH DETAIL
UNDER PAVEMENT AND 12' BEYOND PAVEMENT

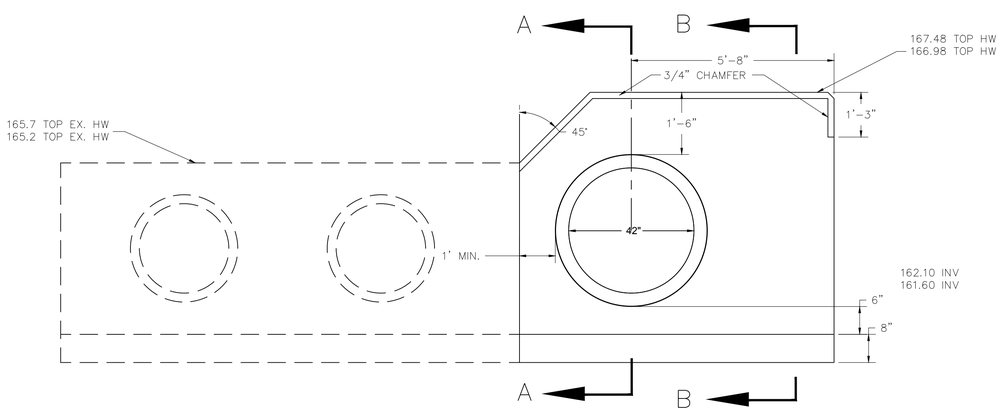
NO SCALE



HEADWALL – REINFORCING STEEL DETAIL

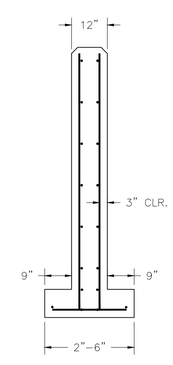


SECTION "A-A"

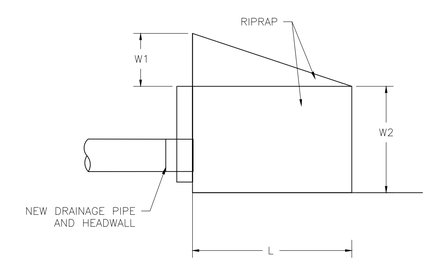


FRONT ELEVATION

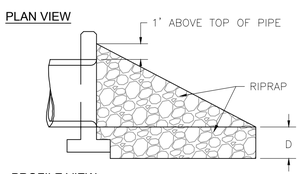
(A) HEADWALL DETAIL
NTS



SECTION "B-B"



PLAN VIEW



PROFILE VIEW

RIPRAP DIMENSIONS

CULVERT DIA (IN)	L(FT)	W1 (FT)	W2 (FT)	RIPRAP DEPTH, D (IN)	RIPRAP SIZE D50 (IN)	
42	15	4	10	18	8	

(B) RIP RAP AT HEADWALL DETAIL
NTS

Reinard W. Brandley
CONSULTING AIRPORT ENGINEER
6125 King Road, Suite 201 · Loomis, California 95650 · (916) 652-4725

ENGINEER OF RECORD

REGISTERED PROFESSIONAL ENGINEER REINARD W. BRANDLEY STATE OF CALIFORNIA CIVIL

No.	REVISIONS	BY	APR	DATE

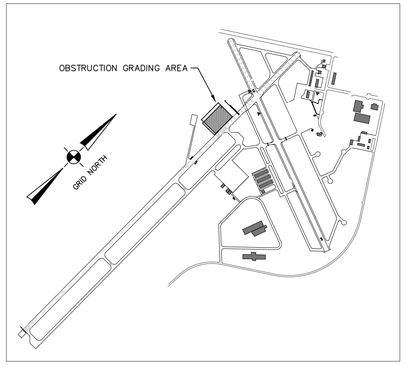
OROVILLE MUNICIPAL AIRPORT
OROVILLE CALIFORNIA

RUNWAY 2-20 GRADING AND DRAINAGE IMPROVEMENTS

DRAINAGE DETAILS

DATE	3/2/2016
DRAWN	KDC
CHECKED	DB
PROJECT No.	13.12
FILE	1312.04.DETAIL
SCALE	NO SCALE
SHEET No.	4 OF 6

G:\1312 GRADE & DRAIN\1312.04.DETAIL.DWG PLOTTED BY Tom Sleinkamp 3/3/2016 1:31 PM



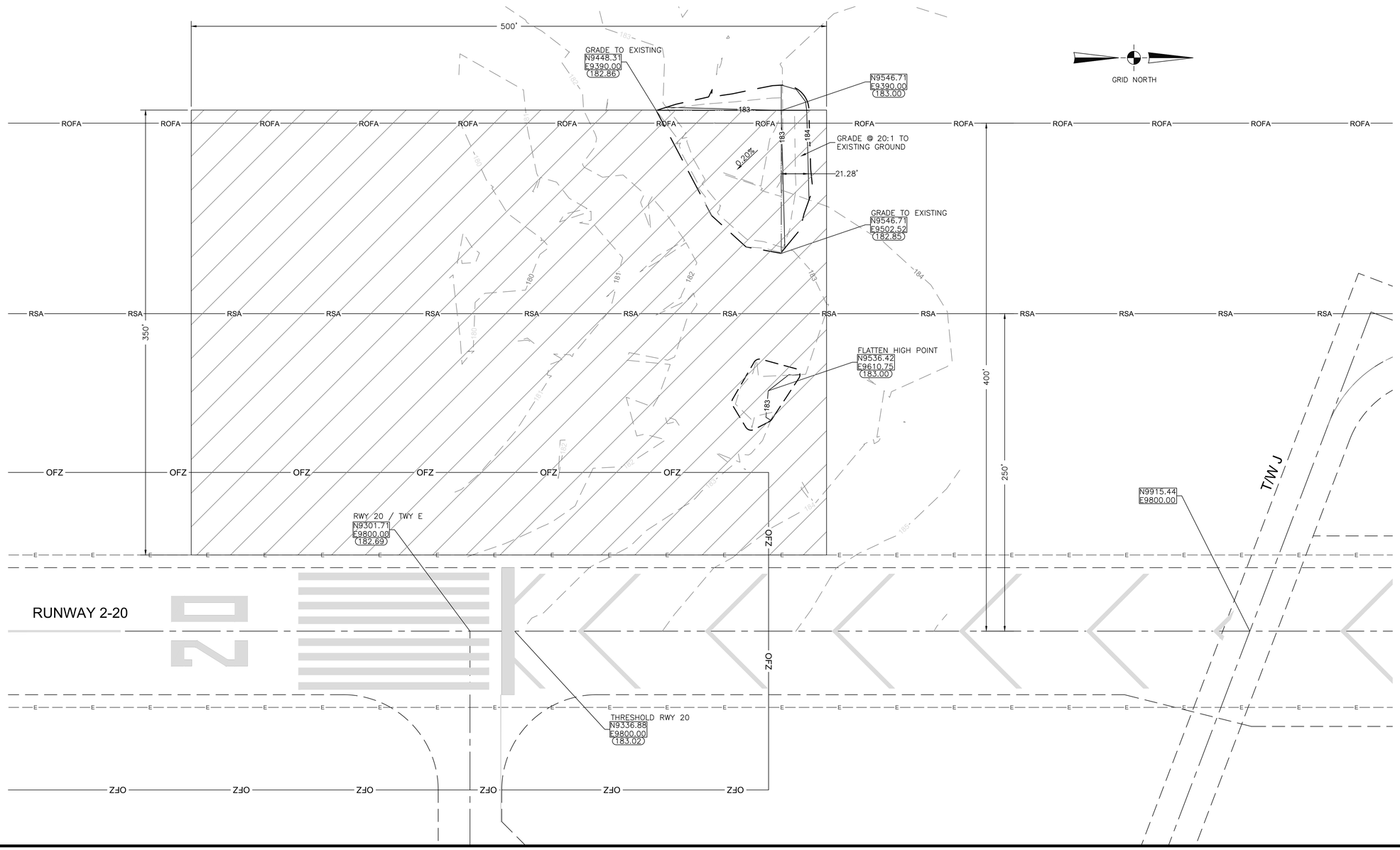
LOCATION MAP

NOTES:

1. ALL OBSTRUCTION GRADING FOR RUNWAY 20 SHALL BE COMPLETED IN ONE WORKING DAY
2. RUNWAY 2–20 SHALL BE CLOSED FOR OBSTRUCTION GRADING WORK. TAXIWAY A, D AND E SHALL BE CLOSED TO PREVENT AIRCRAFT FROM ENTERING RUNWAY 2–20. CONTRACTOR SHALL FURNISH, PLACE AND MAINTAIN BARRICADES TO CLOSE THE TAXIWAYS. CONTRACTOR SHALL FURNISH, PLACE AND MAINTAIN RUNWAY CROSSES TO CLOSE RUNWAY 2–20.
3. AIRPORT OWNER SHALL PROVIDE A QUALIFIED FLAGMAN TO MONITOR AIRPORT FREQUENCY 122.80 MHZ AND OBSERVE OPERATIONS WHEN CONTRACTOR IS WORKING NEAR ACTIVE TAXIWAYS AND RUNWAYS.
4. CONTRACTOR SHALL IDENTIFY, BY APPROVED SURVEY METHOD, ALL AREAS IN THE GRADING AREA SHOWN ON THE PLAN THAT ARE AN OBSTRUCTION IN THE RUNWAY OBJECT FREE AREA. ALL EXISTING GRADES IN THE RUNWAY OFA, AT THE THRESHOLD AND GRID NORTH OF THE RUNWAY THRESHOLD, SHALL BE BELOW THE RUNWAY THRESHOLD ELEVATION OF 183.02. ALL EXISTING GRADES TO THE GRID SOUTH OF THE RUNWAY THRESHOLD SHALL BE BELOW THE RUNWAY CENTERLINE ELEVATION THAT IS PERPENDICULAR TO THAT POINT LOCATED IN THE RUNWAY OBJECT FREE AREA TO BE GRADED.
5. ALL HIGH SPOTS DESIGNATED IN FIELD BY CONTRACTOR SHALL BE GRADED SMOOTH WITH ADJACENT GRADES. RESIDENT ENGINEER WILL APPROVE ALL HIGH SPOTS TO BE GRADED AFTER THE CONTRACTOR HAS IDENTIFIED THE OBSTRUCTIONS.

LEGEND

N9738.46 E13727.35	AIRPORT GRID COORDINATE
— — —	CENTERLINE
— — — —	EX EDGE OF PAVEMENT
— — —E— —	EX UNDERGROUND ELECTRICAL
167	EXISTING CONTOUR
═══	NEW STORM DRAIN
═══	EXISTING STORM DRAIN
◁	NEW FLARED END SECTION
△ ▲	EXISTING CONTROL POINTS



Reinard W. Brandley
CONSULTING AIRPORT ENGINEER
6125 King Road, Suite 201 · Loomis, California 95650 · (916) 652-4725

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OROVILLE MUNICIPAL AIRPORT
OROVILLE CALIFORNIA

RUNWAY 2-20 GRADING AND DRAINAGE IMPROVEMENTS

RUNWAY SAFETY AREA GRADING PLAN

DATE	3/2/2016
DRAWN	TS
CHECKED	DB
PROJECT No.	13.12
FILE	1312.05.GRADING
SCALE	1"=40'
SHEET No.	5 OF 6

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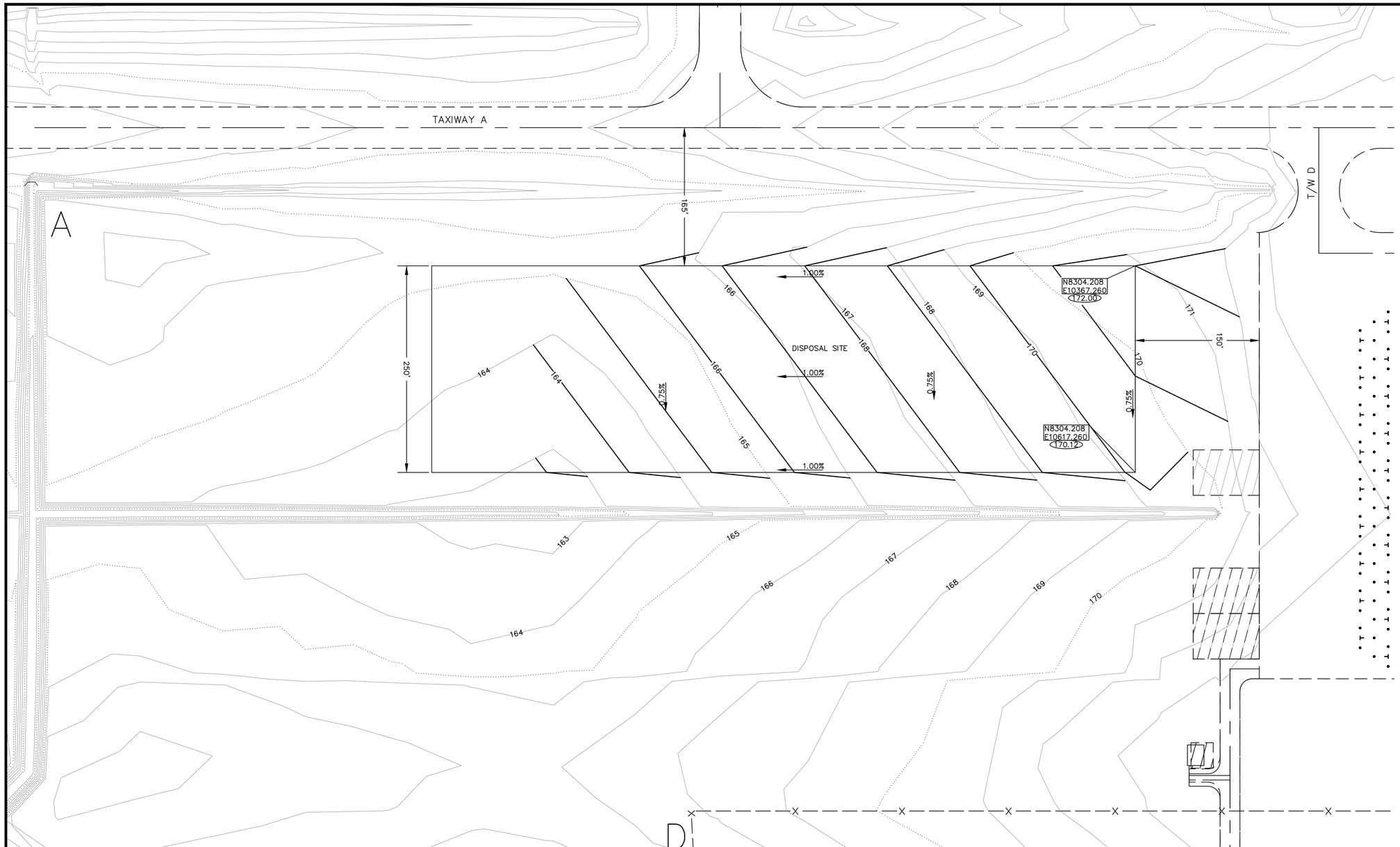

LEGEND

N10554.615 E11154.961	AIRPORT GRID COORDINATES
183.13	FINISH GRADE SPOT ELEVATION
183	FINISH GRADE CONTOUR
180	EXISTING GRADE CONTOUR

NOTE:

1. CONTRACTOR SHALL KEEP ALL PAVEMENTS USED FOR HAULING MATERIAL TO AND FROM DISPOSAL SITE IN BROOM CLEAN CONDITION AT ALL TIMES.
2. HAUL VEHICLES SHALL MAINTAIN RADIO CONTACT WITH FLAGMAN AT ALL TIMES DURING TRAVEL TO AND FROM THE DISPOSAL SITE. AIRCRAFT SHALL HAVE RIGHT OF WAY AT ALL TIMES.
3. DISPOSAL MATERIAL SHALL BE COMPACTED TO 90% OF MAXIMUM DRY DENSITY AND GRADED TO DRAIN. CONTRACTOR SHALL INSTALL AND MAINTAIN FIBER ROLLS AROUND PERIMETER OF DISPOSAL AREA AS SPECIFIED IN THE STORM WATER PROTECTION PLAN.
4. DISPOSAL OF TRENCH EXCAVATION MATERIAL SHALL BE LIMITED TO AREA SHOWN ON THE PLAN. CONTRACTOR SHALL GRADE ALL SPOILS TO DRAIN AT SLOPES SHOWN ON THE PLAN. DISPOSAL MATERIAL WILL NOT EXCEED HEIGHT OF FINISH GRADE CONTOURS SHOWN ON THE PLAN.
5. CONTRACTOR SHALL FOLLOW REHABILITATION OF DISTURBED AREAS AS SPECIFIED IN THE STORM WATER POLLUTION PREVENTION PLAN.

Reinard W. Brandley
CONSULTING AIRPORT ENGINEER
6125 King Road, Suite 201 · Loomis, California 95650 · (916) 652-4725

ENGINEER OF RECORD

REGISTERED PROFESSIONAL ENGINEER REINARD W. BRANDLEY C 20516 FINAL STATE OF CALIFORNIA 3/3/16

No.	REVISIONS	BY	APR	DATE

OROVILLE MUNICIPAL AIRPORT

OROVILLE CALIFORNIA

RUNWAY 2-20 GRADING AND DRAINAGE IMPROVEMENTS

DISPOSAL GRADING PLAN

DATE	3/2/2016
DRAWN	KDC
CHECKED	RWB
PROJECT No.	13.12
FILE	13125006 DISPOSAL GRADING PLAN
SCALE	1"=300'
SHEET No.	6 OF 6

G:\13\12 GRADE & DRAIN\13125006 DISPOSAL GRADING PLAN.DWG PLOTTED BY Tom Steinkamp 3/3/2016 1:34 PM