DULUTH INTERNATIONAL AIRPORT
NEW PASSENGER TERMINAL BUILDING

Director of Airports: Brian Ryks
4701 GRINDEN DRIVE - DULUTH INTERNATIONAL AIRPORT
DULUTH, MINNESOTA 55811

FAA AIP NO. 3-27-0024-48-10
RS&H PROJ. NO. 213-1882-091

DULUTH AIRPORT AUTHORITY BOARD OF DIRECTORS

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CIVIL SITE AND SITE ELECTRICAL



90% DESIGN DEVELOPMENT
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CIVIL SITE AND
SITE ELECTRICAL

REYNOLDS, SMITH AND HILLS
4525 AIRPORT APPROACH ROAD
SUITE A
DULUTH, MINNESOTA 55811

CIVIL CERTIFICATION

I hereby certify that the civil plans, specifications or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name:_____

Signature:_____

Date:_____ License #_____

ELECTRICAL CERTIFICATION

I hereby certify that the electrical (power and lighting) plans, specifications, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name:_____

Signature:_____

Date:_____ License #_____

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DRAWING LIST

G1-00 COVER SHEET
G1-01 DRAWING LIST AND LOCATION MAP

CIVIL SITE

C001 SUMMARY OF QUANTITIES
C002 SAFETY AND SECURITY NOTES AND DETAILS
C003 GENERAL CONSTRUCTION NOTES, LEGEND. AND ABBREVIATIONS
C004 ULTIMATE DEVELOPMENT SITE PLAN
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C006 HORIZONTAL AND VERTICAL CONTROL PLAN & NOTES
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C100 DEMOLITION, CLEARING AND GRUBBING OVERALL PLAN AND NOTES
C101 DEMOLITION, CLEARING AND GRUBBING PLAN (SHEET 1 OF 6)
C102 DEMOLITION, CLEARING AND GRUBBING PLAN (SHEET 2 OF 6)
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C104 DEMOLITION, CLEARING AND GRUBBING PLAN (SHEET 4 OF 6)
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C107 DEMOLITION DETAILS AND PHOTOS

C200 HORIZONTAL GEOMETRY DATA
C201 GEOMETRY PLAN (SHEET 1 OF 6)
C202 GEOMETRY PLAN (SHEET 2 OF 6)
C203 GEOMETRY PLAN (SHEET 3 OF 6)
C204 GEOMETRY PLAN (SHEET 4 OF 6)
C205 GEOMETRY PLAN (SHEET 5 OF 6)
C206 GEOMETRY PLAN (SHEET 6 OF 6)
C207 TYPICAL PAVEMENT SECTIONS (SHEET 1 OF 2)
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C209 CONCRETE PAVEMENT JOINT DETAILS
C210 TYPICAL CURB AND GUTTER DETAILS
C211 FENCING LAYOUT SITE PLAN AND NOTES
C212 FENCING AND GATE DETAILS (SHEET 1 OF 3)
C213 FENCING AND GATE DETAILS (SHEET 2 OF 3)
C214 FENCING AND GATE DETAILS (SHEET 3 OF 3)

C300 CENTERLINE PROFILE GRINDEN DRIVE STA: 0+00 TO STA: 41+44.42
C301 CENTERLINE PROFILES ALL SECONDARY & TEMPORARY ROADS

C400 GRADING AND EROSION CONTROL OVERALL PLAN AND NOTES
C401 GRADING AND EROSION CONTROL PLAN (SHEET 1 OF 6)
C402 GRADING AND EROSION CONTROL PLAN (SHEET 2 OF 6)
C403 GRADING AND EROSION CONTROL PLAN (SHEET 3 OF 6)
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C406 GRADING AND EROSION CONTROL PLAN (SHEET 6 OF 6)
C407 EROSION, AND SEDIMENTATION CONTROL NOTES AND DETAILS (SHEET 1 OF 4)
C408 EROSION, AND SEDIMENTATION CONTROL NOTES AND DETAILS (SHEET 2 OF 4)
C409 EROSION, AND SEDIMENTATION CONTROL NOTES AND DETAILS (SHEET 3 OF 4)
C410 EROSION, AND SEDIMENTATION CONTROL NOTES AND DETAILS (SHEET 4 OF 4)

C500 DRAINAGE OVERALL PLAN
C501 DRAINAGE PLAN (SHEET 1 OF 6)
C502 DRAINAGE PLAN (SHEET 2 OF 6)
C503 DRAINAGE PLAN (SHEET 3 OF 6)
C504 DRAINAGE PLAN (SHEET 4 OF 6)
C505 DRAINAGE PLAN (SHEET 5 OF 6)
C506 DRAINAGE PLAN (SHEET 6 OF 6)
C507 DRAINAGE PROFILES

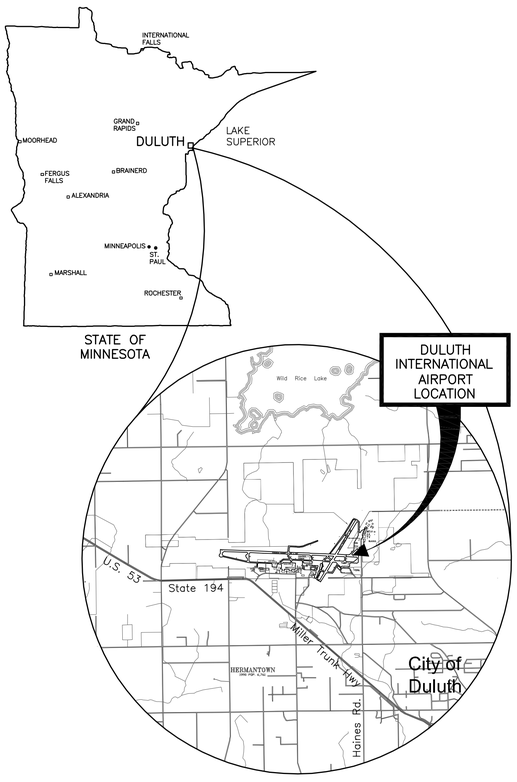
C600 SITE UTILITY OVERALL PLAN AND NOTES
C601 SITE UTILITY PLAN (SHEET 1 OF 6)
C602 SITE UTILITY PLAN (SHEET 2 OF 6)
C603 SITE UTILITY PLAN (SHEET 3 OF 6)
C604 SITE UTILITY PLAN (SHEET 4 OF 6)
C605 SITE UTILITY PLAN (SHEET 5 OF 6)
C606 SITE UTILITY PLAN (SHEET 6 OF 6)
C607 SANITARY PROFILES
C608 UTILITY CITY OF DULUTH DETAILS (SHEET 1 OF 2)
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C700 PAVEMENT MARKING & SIGNAGE OVERALL SITE PLAN
C701 PAVEMENT MARKING & SIGNAGE PLAN (SHEET 1 OF 6)
C702 PAVEMENT MARKING & SIGNAGE PLAN (SHEET 2 OF 6)
C703 PAVEMENT MARKING & SIGNAGE PLAN (SHEET 3 OF 6)
C704 PAVEMENT MARKING & SIGNAGE PLAN (SHEET 4 OF 6)
C705 PAVEMENT MARKING & SIGNAGE PLAN (SHEET 5 OF 6)
C706 PAVEMENT MARKING & SIGNAGE PLAN (SHEET 6 OF 6)
C707 PAVEMENT MARKING & SIGNAGE DETAILS

ELECTRICAL SITE

E100 SITE ELECTRICAL & COMM. OVERALL PLAN AND NOTES
E101 SITE ELECTRICAL PLAN (SHEET 1 OF 6)
E102 SITE ELECTRICAL PLAN (SHEET 2 OF 6)
E103 SITE ELECTRICAL PLAN (SHEET 3 OF 6)
E104 SITE ELECTRICAL PLAN (SHEET 4 OF 6)
E105 SITE ELECTRICAL PLAN (SHEET 5 OF 6)
E106 SITE ELECTRICAL PLAN (SHEET 6 OF 6)

E400 ELECTRICAL NOTES AND DETAILS



1 LOCATION MAP
N.T.S.

NORTH

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DULUTH AIRPORT AUTHORITY

DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW TERMINAL DESIGN

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APPOLD DESIGN
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TEL: (218) 591-5079

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: JOHN E. HIPPCHEN

Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

DRAWING LIST AND LOCATION MAP

SHEET NUMBER
G1-01

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BID ITEM	SPEC. NUMBER	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	RECORD QUANTITY
1	P-100	MOBILIZATION	LS	1	
2	P-102	SAFETY AND SECURITY	LS	1	
3	P-104	PROJECT SURVEY AND STAKEOUT	LS	1	
4	P-105	TEMPORARY CONSTRUCTION ITEMS	LS	1	
5	P-156.501	EROSION CONTROL	LS	1	
6	2101.501/00010	CLEARING	ACRE	1.6	
7	2101.502/00010	CLEARING	TREE	75	
8	2101.506/00010	GRUBBING	ACRE	1.6	
9	2103.501/00010	BUILDING REMOVAL (CONRAC)	LS	1	
10	2104.501	REMOVE WATER MAIN AND VALVES	LF	550	
11	2104.501/00016	REMOVE SEWER PIPE (STORM)	LF	1575	
12	2104.501/00017	REMOVE SEWER PIPE (SANITARY)	LF	275	
13	2104.501/00035	REMOVE FENCE	LF	3100	
14	2104.501/00040	REMOVE GUARD RAIL	LF	500	
15	2104.509/00100	REMOVE MANHOLES OR CATCH BASINS	EACH	16	
16	2104.509/00101	REMOVE MANHOLE (SANITARY)	EACH	1	
17	2104.509/00111	REMOVE HYDRANT	EACH	2	
18	2104.511/00011	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LF	150	
19	2104.513/00011	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LF	1250	
20	2105.503/00010	ROCK EXCAVATION	CY	2000	
21	2105.505/00010	MUCK EXCAVATION	CY	2000	
22	2105.515/00010	UNCLASSIFIED EXCAVATION	CY	43000	
23	2105.521/00032	GRANULAR BORROW MOD 7% (CV)	CY	15900	
24	2105.523	COMMON BORROW	CY	9000	
25	2105.525/00030	TOPSOIL BORROW (CV) OBTAINED OFFSITE	CY	800	
26	2105.604	GEOTEXTILE FABRIC TYPE V	SY	22100	
27	2211.503/00050	AGGREGATE BASE (CV) CLASS 5	CY	8500	
28	2221.503/00010	AGGREGATE SHOULDERING (CV) CLASS 1	CY	90	
29	2357.502/00010	BITUMINOUS MATERIAL FOR TACK COAT	GAL	1700	
30	2358.501/00010	BITUMINOUS MATERIAL FOR PRIME COAT	GAL	1300	
31	2360.501/23600	TYPE (SP12.5) WEARING COURSE MIXTURE (3,F)	TON	1100	
32	2360.502/23600	TYPE (SP12.5) NON WEARING COURSE MIXTURE (3,F)	TON	2100	
33	2401.515	SIDEWALK CONCRETE (MIX #3A32) W/ 6" x 6" WWF	SF	2000	
34	2401.521/00030	STRUCTURE EXCAVATION CLASS R	CY	300	
35	2503.511	12" CORRUGATED HDPE PIPE SEWER	LF	750	
36	2503.511	15" CORRUGATED HDPE PIPE SEWER	LF	175	
37	2503.511	18" CORRUGATED HDPE PIPE SEWER	LF	350	
38	2503.511	24" CORRUGATED HDPE PIPE SEWER	LF	600	
39	2503.511	30" CORRUGATED HDPE PIPE SEWER	LF	110	
40	2503.511	42" CORRUGATED HDPE PIPE SEWER	LF	165	
41	2503.511/13080	8" PVC PIPE SEWER (SANITARY)	LF	550	
42	2503.515	42" STEEL FLARED END SECTION	EACH	1	
43	2503.602	CONNECT TO EXISTING STORM MANHOLE	EACH	2	
44	2503.602/00040	CONNECT TO EXISTING SANITARY SEWER	EACH	2	
45	2503.603/01308	LINING SEWER PIPE 8"	LF	500	
46	2504.602/00022	RELOCATE HYDRANT & VALVE	EACH	1	
47	2504.602/00024	INSTALL HYDRANT & VALVE	EACH	1	
48	2504.602/00029	INSTALL GATE & VALVE	EACH	6	
49	2504.603/01042	4" WATERMAIN DUCTILE IRON CL 52	LF	40	
50	2504.603/01063	6" WATERMAIN DUCTILE IRON CL 53	LF	325	
51	2504.603/01083	8" WATERMAIN DUCTILE IRON CL 53	LF	600	
52	2505.602/00020	CONNECT TO EXISTING GAS MAIN	EACH	1	
53	2505.603/02020	2" HP POLYETHYLENE GAS MAIN	LF	250	
54	2506.502	CONSTRUCT DRAINAGE STRUCTURE W/ CASTING	EACH	22	
55	2506.521	SANITARY CASTING	EACH	1	
56	2506.522/00011	ADJUST FRAME & RING CASTING	EACH	9	
57	2506.602/00011	MANHOLE (SANITARY)	EACH	1	
58	2511.501	RANDOM RIPRAP CLASS IV	CYD	18	
59	2531.501/02320	CONCRETE CURB & GUTTER DESIGN B624	LF	2900	
60	2531.602/00030	PEDESTRIAN CURB RAMP (TYPE SPECIAL)	EACH	4	
61	2545.523/00053	2" NON-METALLIC CONDUIT (PVC)	LF	8100	
62	2545.523/00103	4" NON-METALLIC CONDUIT (PVC)	LF	600	
63	2545.523/00152	6" NON-METALLIC CONDUIT (PVC)	LF	610	
64	2550.512	QUAZITE CAT. NO. PG1730BB30 ELECTRICAL HANDHOLE w/ LID OR APPROVED EQUAL	EACH	2	
65	2550.512	QUAZITE CAT. NO. PG2436BB36 ELECTRICAL HANDHOLE w/PG2436HA00 LID OR APPROVED EQUAL	EACH	2	
66	2550.512	QUAZITE CAT. NO. PG4872BA48 ELECTRICAL HANDHOLE w/ 15" EXTENSION AND LID OR APPROVED EQUAL	EACH	2	
67	2550.532/11040	POWER CABLE 1 CONDUCTOR NO 4 (EQUIPMENT GROUND)	LF	5100	
68	2550.532/14080	POWER CABLE 4 CONDUCTOR NO 6	LF	3450	
69	2550.532/14080	POWER CABLE 4 CONDUCTOR NO 8	LF	1700	
70	2550.532	POWER CABLE 2 CONDUCTOR NO 8	LF	250	
71	2573.502	SILT FENCE TYPE HEAVY DUTY	LF	400	
72	2573.530	STORM DRAIN INLET PROTECTION	EACH	17	
73	2573.540	FILTER LOG TYPE STRAW BIOROLL	LF	400	
74	2573.550	EROSION CONTROL SUPERVISOR	LS	1	
75	2573.604	ROCK CONSTRUCTION ENTRANCE	SY	1200	
76	2575.501/00010	SEEDING	ACRE	4.2	
77	2575.502	SEED MIXTURE 250	LBS	500	
78	2575.505/00030	SODDING TYPE LAWN	SY	3500	
79	2575.523	EROSION CONTROL BLANKET CATEGORY 2	SY	13500	
80	2575.532	FERTILIZER TYPE 1 10-10-10	LBS	1900	
81	2575.560	HYDRAULIC SOIL STABILIZER, TYPE 6	LBS	1700	
82	2575.572	RAPID STABILIZATION METHOD 4	SY	13750	
83	2582.502/11104	4" SOLID LINE WHITE-PAINT	LF	11500	
84	2582.502/11304	4" DOTTED LINE WHITE-PAINT	LF	900	
85	SP 40.3	SALVAGE GATE OPERATOR	EACH	6	
86	SP 41.3	SALVAGE TICKET DISPENSOR	EACH	4	
87	SP 42.3	REMOVE LIGHT & BASE	EACH	18	
88	SP 43.3	PROVIDE AND INSTALL ENTRANCE/EXIT GATES W/ FOUNDATION	EACH	6	

ADD ALTERNATE #1

BID ITEM	SPEC. NUMBER	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	RECORD QUANTITY
89	2103.501/00010	BUILDING REMOVAL (CONRAC)	LS	1	
90	2104.501/00035	REMOVE FENCE	LF	100	
91	2104.501/00062	REMOVE CONCRETE CURB AND GUTTER	LF	190	
92	2104.505/00110	REMOVE CONCRETE PAVEMENT	SY	370	
93	2104.505/00120	REMOVE BITUMINOUS PAVEMENT (NOMINAL 4-8")	SY	4050	
94	2104.509/00017	REMOVE UNDERGROUND TANK	EACH	1	
95	2104.509/00019	REMOVE GAS PUMP	EACH	1	
96	2104.513/00011	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LF	675	
97	2105.521/00032	GRANULAR BORROW MOD 7% (CV)	CY	650	
98	2105.604	GEOTEXTILE FABRIC TYPE V	SY	950	
99	2105.607/00250	HAUL & DISPOSE OF CONTAMINATED MATERIAL	CY	100	
100	2211.503/00050	AGGREGATE BASE (CV) CLASS 5	CY	560	
101	2357.502/00010	BITUMINOUS MATERIAL FOR TACK COAT	GAL	175	
102	2358.501/00010	BITUMINOUS MATERIAL FOR PRIME COAT	GAL	135	
103	2360.501/23600	TYPE (SP12.5) WEARING COURSE MIXTURE (3,F)	TON	110	
104	2360.502/23600	TYPE (SP12.5) NON WEARING COURSE MIXTURE (3,F)	TON	210	

ADD ALTERNATE #2

BID ITEM	SPEC. NUMBER	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	RECORD QUANTITY
105	F-162.502	6' CHAIN LINK FENCE W/ 3 STRANDS BARBED WIRE	LF	1000	
106	F-162.503	10' CHAIN LINK FENCE W/ 3 STRANDS BARBED WIRE	LF	2100	
107	F-162.504	14' WIDE x 8' MANUAL SLIDE GATE W 3 STRANDS BARBED WIRE	LS	1	
108	F-162.505	PEDESTRIAN GATE 10' HEIGHT	LS	1	

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Duluth, Minnesota 55811
218-722-1227 Fax: 218-722-1052
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DULUTH AIRPORT AUTHORITY

DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW TERMINAL DESIGN

CONSULTANTS

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11 E Superior Street Suite 340, Duluth MN 55802
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TEL: (218) 591-5079

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: JOHN E. HIPPCHEN

Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

SUMMARY OF QUANTITIES

SHEET NUMBER

C001

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SAFETY REQUIREMENTS

1. ALL CONTRACTOR VEHICLES SHALL DISPLAY IN FULL VIEW A FLASHING AMBER (YELLOW) DOME–TYPE LIGHT AND/OR ABOVE THE VEHICLE A 3' X 3' OR LARGER, ORANGE AND WHITE CHECKERBOARD FLAG, EACH CHECKERBOARD COLOR BEING 1–FOOT SQUARE, (SEE CONSTRUCTION SAFETY FLAG DETAIL, THIS SHEET).

2. DEBRIS, WASTE AND LOOSE MATERIAL CAPABLE OF CAUSING DAMAGE TO AIRCRAFT LANDING GEARS, PROPELLERS OR BEING INGESTED IN JET ENGINES SHALL NOT BE ALLOWED ON AIRSIDE PAVEMENTS. IF THESE MATERIALS ARE OBSERVED TO BE ON AIRSIDE PAVEMENTS, THEY WILL BE REMOVED IMMEDIATELY AND/OR CONTINUOUSLY BY THE CONTRACTOR DURING CONSTRUCTION.

3. THE CONTRACTOR IS DIRECTED TO COMPLY WITH AND ACQUAINT HIS/HER EMPLOYEES WITH THE FOLLOWING SAFETY GUIDELINES, RELATED MATERIALS AND FAA ADVISORY CIRCULARS:

   150/5200–18C "AIRPORT SAFETY–SELF INSPECTION"
   150/5210–5C "PAINTING, MARKING & LIGHTING OF VEHICLES USED ON AIRPORTS"
   150/5370–2E "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION"

   COPIES OF THESE DOCUMENTS ARE PROVIDED IN THE CONTRACT SPECIFICATIONS.

4. CONSTRUCTION DURING THE PROJECT MAY BE HALTED AT ANY TIME BY RPR, ENGINEER, AND/OR AIRPORT OPERATIONS IF IT IS DETERMINED TO BE IN THE BEST INTEREST OF AIRPORT OPERATIONS OR SAFETY. THE CONTRACTOR MAY BE DIRECTED TO REMOVE EQUIPMENT AND/OR EVACUATE THE SITE IN ORDER TO ENABLE AIRCRAFT OPERATIONS, COMMERCIAL, MILITARY OR GENERAL AVIATION NECESSARY EXTENSIONS IN CONTRACT TIME WILL BE GRANTED OR A STOP WORK ORDER WILL BE ISSUED DUE TO THESE DELAYS, HOWEVER, THERE WILL BE NO ADJUSTMENTS IN CONTRACT PRICE DUE TO THESE DELAYS.

   IN ADDITION TO THE ABOVE, THE FOLLOWING SPECIAL REQUIREMENTS WILL APPLY FOR NIGHT CONSTRUCTION:

   a. A DAILY SAFETY AND PROGRESS MEETING SHALL BE HELD BETWEEN THE ENGINEER AND THE CONTRACTOR'S SUPERINTENDENT TO DISCUSS REQUIREMENTS FOR THE NEXT NIGHTTIME WORK PERIOD.

   b. THE CONTRACTOR SHALL PREPARE A SAFETY PLAN SPECIFIC TO NIGHTTIME CONSTRUCTION OPERATIONS, AS WELL AS A CONTINGENCY PLAN TO ADDRESS CASES OF ABNORMAL FAILURES OR UNEXPECTED DISASTERS USING APPENDIX 3 OF AC 150/5370–2E AS A GUIDE.

5. THE CONTRACTOR SHALL INSTALL ALL REQUIRED BARRICADES AT DESIGNATED PLAN LOCATIONS, HAVE ALL ACCESS GATES GUARDED AND LOCKABLE, HAVE ALL EQUIPMENT EITHER FLAGGED OR FITTED WITH FLASHING YELLOW DOME–TYPE LIGHTS ON TOP OF THE VEHICLES. ALL THESE ITEMS SHALL CONSIST OF THE SAFETY AND SECURITY SYSTEM. THE CONTRACTOR SHALL INSTALL THE COMPONENTS OF THE SYSTEM AT THE APPROPRIATE TIMES AS SPECIFIED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL INSPECT EVERY ASPECT OF THE SAFETY AND SECURITY SYSTEM ON AT LEAST A DAILY BASIS AND ENSURE ALL COMPONENTS ARE FUNCTIONING PROPERLY. THE RESIDENT PROJECT REPRESENTATIVE (RPR) SHALL ALSO DAILY INSPECT THE SYSTEM AND IF ANY DEFICIENCIES ARE NOTED, THE CONTRACTOR SHALL HAVE THAT DAY'S PRORATED SAFETY AND SECURITY COST DEDUCTED FROM THE CONTRACTOR'S EARNINGS. THE SYSTEM ELEMENTS TO BE INSPECTED AND DEFICIENCIES NOTED ARE AS FOLLOWS:

   *BARRICADES SET PROPERLY AND ALL FLASHING WARNING LIGHTS OPERATING PROPERLY.
   *ALL CONTRACTOR PERSONNEL AND EQUIPMENT ACCESS GATES MANNED AND SECURITY PROCEDURES IN PLACE.
   *ALL EQUIPMENT FLAGGED OR OUTFITTED WITH FLASHING YELLOW DOME–TYPE LIGHTS.
   *CONTRACTOR USE OF UNAUTHORIZED AIRPORT ACCESS GATES CHECKED.

   ANY OF THE ABOVE SAFETY AND SECURITY ITEMS FOUND TO BE DEFICIENT AT THE BEGINNING OF THE DAY BY THE RPR AND/OR AIRPORT OPERATIONS STAFF WILL RESULT IN THAT DAY'S PRORATED SAFETY AND SECURITY BID ITEM LOST AND BEING DEDUCTED PERMANENTLY FROM THE CONTRACTOR'S EARNINGS. THE CONTRACTOR SHALL MAKE A CONCERTED EFFORT TO ENSURE ALL SAFETY AND SECURITY ITEMS ARE IN PROPER WORKING ORDER EACH DAY DUE TO THE HEIGHTENED SECURITY STATUS OF THE AIRPORT AND THE CONSIDERABLE LIABILITY ASSOCIATED WITH THE SAFETY AND SECURITY WORK.

6. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO ENSURE THE SAFETY OF THE TRAVELING PUBLIC AS WELL AS HIS OWN EQUIPMENT AND PERSONNEL. SPECIAL CONSIDERATIONS SHOULD BE GIVEN TO FLIGHT SCHEDULES. THE CONTRACTOR SHALL OBEY ALL INSTRUCTIONS AS TO ROUTES TO BE TAKEN BY EQUIPMENT TRAVELING WITHIN THE AIRPORT AREA AND KEEP SUCH VEHICLES AND EQUIPMENT MARKED WITH THE SPECIFIED AIRPORT SAFETY FLAGS. THE CONTRACTOR SHALL MAKE HIS OWN ESTIMATE OF ALL DIFFICULTIES TO BE ENCOUNTERED. EQUIPMENT NOT ACTUALLY IN OPERATION SHALL BE KEPT CLEAR OF LANDING AREAS. PERSONNEL SHALL NOT ENTER AREAS OF THE AIRPORT WHERE AIRCRAFT ARE OPERATING WITHOUT SPECIFIC PERMISSION.

7. THE CONTRACTOR SHALL TAKE ALL STEPS TO PROTECT THE EXISTING UNDERGROUND CABLES AND COMMERCIAL, AIRPORT AUTHORITY AND MILITARY UTILITIES DURING CONSTRUCTION TO ASSURE CONTINUOUS OPERATION OF LIGHTS AND NAVIGATIONAL AIDS WHEN NEEDED.

8. MATERIALS STORED ON OR STOCKPILED ON THE AIRPORT SHALL BE SO PLACED AND THE WORK SHALL, AT ALL TIMES, BE SO CONDUCTED AS TO CAUSE NO GREATER OBSTRUCTION TO THE TRAVELING PUBLIC THAN IS CONSIDERED NECESSARY BY THE ENGINEER.

9. THE CONTRACTOR SHALL ERECT AND MAINTAIN ALL NECESSARY BARRICADES, SIGNS, DANGER SIGNALS AND LIGHTS FOR THE PROTECTION OF THE WORK AND THE SAFETY OF THE TRAVELING PUBLIC IN ACCORDANCE WITH THE SPECIFICATIONS (AC 150/5370–2E).

10. THE CONTRACTOR SHALL HAVE PERSONNEL ON CALL 24 HOURS PER DAY FOR EMERGENCY MAINTENANCE OF HAZARD LIGHTING AND BARRICADES.

11. THE AIRPORT DIRECTOR, WORKING THROUGH THE ENGINEER, SHALL, AT ALL TIMES, HAVE COMPLETE JURISDICTION OVER THE SAFETY OF ALL OPERATIONS DURING THE WORK. WHERE EVER THE SAFETY OF THE TRAVELING PUBLIC IS CONCERNED, THE DECISIONS OF THE AIRPORT DIRECTOR OR HIS DESIGNATED REPRESENTATIVE, SHALL BE FINAL AS TO METHODS, PROCEDURES AND MEASURES USED.

12. THE CONTRACTOR SHALL CONTACT THE MINNESOTA AIRWAY FACILITIES SECTOR POINT OF CONTACT (POC) (ANDY GOMEZ AT 218–722–2826) TO PROVIDE FIELD LOCATIONS OF EXISTING FACILITY CABLES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HAND DIGGING TO LOCATE FACILITY CABLING, AND PROTECTION OF THOSE CABLES THROUGHOUT THE PROJECT.

13. THE CONTRACTOR SHALL CONFINE HIS PERSONNEL, EQUIPMENT, OPERATIONS AND TRAVEL TO THE AREA WITHIN THE DEFINED WORK LIMITS SHOWN ON THE PLANS.

14. THE CONTRACTOR SHALL INFORM ALL CONSTRUCTION PERSONNEL AS TO THE PROPER ROUTES, SPEEDS AND PROCEDURES FOR TRANSPORTING EQUIPMENT AND MATERIALS TO THE CONSTRUCTION SITE. ON A DAILY BASIS AND MORE OFTEN IF NECESSARY ALL PERSONNEL SHALL BE ADVISED OF ANY CHANGES IN AIRPORT OPERATIONS THAT MAY FURTHER RESTRICT HIS MOVEMENT.

15. ACCESS OR HAUL ROUTES SHALL BE EXISTING ROADWAYS TO THE EXTENT THAT THEY ARE AVAILABLE. THE CONTRACTOR SHALL CORRECT ANY DAMAGE TO THE ROADS USED AND SHALL RESTORE THOSE ROADS TO THE SAME OR BETTER CONDITION AS THEY EXISTED PRIOR TO THE START OF WORK. THE CONTRACTOR MAY ESTABLISH ADDITIONAL HAUL OR ACCESS ROUTES AT HIS OWN EXPENSE AND RESPONSIBILITY IF APPROVED BY THE SPONSOR. UPON COMPLETION OF THE WORK, ANY ADDITIONAL ROADS SHALL EITHER BE LEFT OR GRADED AS DIRECTED SO THAT THEY DO NOT IMPEDE THE EXISTING DRAINAGE OR ACCESS ROUTES.

16. MEASURES SHALL BE ADOPTED TO PREVENT POTENTIAL POLLUTANTS FROM ENTERING ANY DRAINAGE SYSTEM OR WATERWAY. MATERIALS AND DEBRIS SHALL NOT BE STORED IN THE WORK AREA IN A MANNER THAT WOULD ALLOW THEM TO ENTER THE DRAINAGE SYSTEM AS A RESULT OF SPILLAGE, NATURAL RUNOFF OR FLOODING. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IMMEDIATELY NOTIFY THE SPONSOR SHOULD THERE BY A SPILLAGE OF MATERIAL WHICH MIGHT CONTAMINATE THE DRAINAGE SYSTEM. IT SHALL ALSO BE THE CONTRACTOR'S RESPONSIBILITY TO REMOVE AND CLEAR UP SUCH SPILLAGE IN A MANNER ACCEPTABLE TO THE SPONSOR. MATERIAL SHALL BE SECURED SO THAT IT WILL NOT BE BLOWN BY THE WIND ONTO THE AIRFIELD SURFACES.

17. SPECIAL ATTENTION TO DUST CONTROL WILL BE REQUIRED WHEN EARTHWORK OR HAULING OPERATIONS ARE IN PROGRESS OR WHEN WIND AND WEATHER CONDITIONS CAUSE EXCESSIVE BLOWING OF DUST. IN THIS REGARD, THE CONTRACTOR SHALL APPLY WATER OR CALCIUM CHLORIDE SOLUTION TO THE AFFECTED SITES AS DIRECTED.

18. VEHICLES WITHIN THE SECURITY FENCE SHALL BE VISIBLY IDENTIFIABLE AS CONTRACTOR VEHICLES WHICH HAVE BEEN PROPERLY CLEARED FOR ENTRY (LOGO AND FLAGS ON AUTHORIZED EQUIPMENT AND VEHICLES WOULD BE ACCEPTABLE.)

19. CONSTRUCTION EQUIPMENT SHALL HAVE A MAXIMUM HEIGHT OF TWENTY–FIVE (25) FEET.

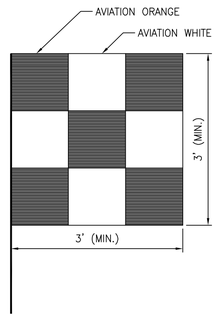
20. THE CONTRACTOR SHALL SUBMIT A SAFETY AND SECURITY PLAN TO THE ENGINEER FOR REVIEW AND APPROVAL BY THE AIRPORT AUTHORITY PRIOR TO CONSTRUCTION COMMENCING.

21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING UTILITY LINES AND HAND DIGGING TO LOCATE FAA CABLING AND SHALL PROVIDE ADEQUATE PROVISIONS TO PROTECT ALL FAA CABLES EXPOSED DURING THE PROPOSED WORK. THE SPONSOR/CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE AIRWAY FACILITY SMO AT THE PROJECT PRECONSTRUCTION MEETING SHOULD CABLE RELOCATION BE NECESSARY.

22. ANY DAMAGE TO FAA CABLES, ACCESS ROADS, OR TO FAA FACILITIES DURING THE CONSTRUCTION WILL REQUIRE THE CONTRACTOR TO REPLACE THE DAMAGED CABLES, ACCESS ROAD, OR FAA FACILITIES TO THE AF SMO'S REQUIREMENTS, AND AT THE CONTRACTORS' EXPENSE.

23. IF ANY FAA POWER, CONTROL, OR SIGNAL CABLES ARE DAMAGED, THE SPONSOR/CONTRACTOR SHALL REPLACE THE CABLE IN ITS ENTIRETY. THE SPLICING OF CABLES IS NOT AN ACCEPTABLE FORM OF REPAIR.

NOTE: SAFETY FLAG SHALL BE PROMINENTLY DISPLAYED ON ALL CONSTRUCTION EQUIPMENT. (SEE NOTE 1 UNDER SAFETY)



CONSTRUCTION SAFETY FLAG

N.T.S.

SECURITY REQUIREMENTS

1. GENERAL INTENT: IT IS INTENDED THAT THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE AIRPORT SECURITY PLAN AND WITH THE SECURITY REQUIREMENTS SPECIFIED HEREIN BY AIRPORT OPERATIONS. THE CONTRACTOR SHALL DESIGNATE TO THE ENGINEER AND AIRPORT OPERATIONS, IN WRITING, THE NAME OF HIS "CONTRACTOR SECURITY AND SAFETY OFFICER (CSSO)." THE CSSO SHALL REPRESENT THE CONTRACTOR ON THE SECURITY REQUIREMENTS FOR THE CONTRACT.

2. CONTRACTOR PERSONNEL SECURITY ORIENTATION: THE CSSO SHALL BE RESPONSIBLE FOR BRIEFING ALL CONTRACTOR PERSONNEL ON SECURITY REQUIREMENTS. ALL NEW CONTRACTOR EMPLOYEES SHALL BE BRIEFED ON SECURITY REQUIREMENTS PRIOR TO WORKING IN THE CONSTRUCTION AREA. THE AIRPORT SHALL BRIEF AND/OR TRAIN CONSTRUCTION RELATED VEHICLE EQUIPMENT DRIVERS ON OPERATIONS WITHIN AN AIRPORT/AIRCRAFT ENVIRONMENT. AIRPORT MANAGEMENT SHOULD PROVIDE PRINTED MATERIAL TO EACH VEHICLE OPERATOR THAT DEPICTS HAUL ROUTES, PROHIBITED MOVEMENT AREAS, AND DESCRIBES THE CONSEQUENCES FOR NON–COMPLIANCE WITH ESTABLISHED PROCEDURES. THE AIRPORT HAS IMPLEMENTED A ZERO TOLERANCE APPROACH TO DRIVING VIOLATIONS.

3. ACCESS TO THE SITE: CONTRACTOR'S ACCESS TO THE SITE SHALL BE AS SHOWN ON THE PLANS. NO OTHER ACCESS POINTS SHALL BE ALLOWED UNLESS APPROVED BY AIRPORT OPERATIONS. ALL CONTRACTOR TRAFFIC AUTHORIZED TO ENTER THE SITE SHALL BE EXPERIENCED IN THE ROUTE OR GUIDED BY CONTRACTOR PERSONNEL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC CONTROL TO AND FROM THE VARIOUS CONSTRUCTION AREAS ON THE SITE, AND FOR THE OPERATION AND SECURITY OF THE ACCESS GATE TO THE SITE. A CONTRACTOR'S FLAGMAN OR TRAFFIC CONTROL PERSON SHALL MONITOR AND COORDINATE ALL CONTRACTOR TRAFFIC AT THE ACCESS GATE WITH SECURITY. THE CONTRACTOR SHALL NOT PERMIT ANY UNAUTHORIZED CONSTRUCTION PERSONNEL OR TRAFFIC ON THE SITE. ACCESS GATES TO THE SITE SHALL BE LOCKED AND SECURED AT ALL TIMES WHEN NOT ATTENDED BY THE CONTRACTOR. IF THE CONTRACTOR CHOOSES TO LEAVE ANY ACCESS GATE OPEN, IT SHALL BE ATTENDED BY CONTRACTOR PERSONNEL WHO ARE FAMILIAR WITH THE REQUIREMENTS OF THE AIRPORT OPERATIONS SECURITY PROGRAM. THE CONTRACTOR IS RESPONSIBLE FOR THE IMMEDIATE CLEANUP OF ANY DEBRIS DEPOSITED ALONG THE ACCESS ROUTE AS A RESULT OF HIS CONSTRUCTION TRAFFIC. DIRECTIONAL SIGNING FROM THE ACCESS GATE ALONG THE DELIVERY ROUTE TO THE STORAGE AREA, PLANT SITE OR WORK SITE SHALL BE AS DIRECTED BY AIRPORT OPERATIONS.

4. MATERIALS DELIVERY TO THE SITE: ALL CONTRACTOR'S MATERIAL ORDERS FOR DELIVERY TO THE WORK SITE WILL USE AS A DELIVERY ADDRESS, THE STREET NAME ASSIGNED TO THE ACCESS POINT AT THE CONTRACTOR'S STAGING SITE AT THE AIRPORT. THE NAME "DULUTH INTERNATIONAL AIRPORT" SHALL NOT BE USED IN THE DELIVERY ADDRESS AT ANY TIME. THIS WILL PRECLUDE DELIVERY TRUCKS FROM ENTERING INTO THE TERMINAL COMPLEX, OR TAKING SHORT CUTS THROUGH THE PERIMETER GATES AND ENTERING INTO AIRCRAFT OPERATIONS AREAS INAPPROPRIATELY.

5. CONSTRUCTION AREA LIMITS: THE LIMITS OF CONSTRUCTION, MATERIAL STORAGE AREAS, PLANT SITE, EQUIPMENT STORAGE AREA, PARKING AREA AND OTHER AREAS DEFINED AS REQUIRED FOR THE CONTRACTOR'S EXCLUSIVE USE DURING CONSTRUCTION SHALL BE MARKED BY THE CONTRACTOR. THE CONTRACTOR SHALL ERECT AND MAINTAIN AROUND THE PERIMETER OF THESE AREAS SUITABLE FENCING, MARKING AND/OR WARNING DEVICES VISIBLE FOR DAY/NIGHT USE. TEMPORARY BARRICADES, FLAGGING AND FLASHING WARNING LIGHTS WILL BE REQUIRED AT CRITICAL ACCESS POINTS. TYPE OF MARKING AND WARNING DEVICES SHALL BE APPROVED BY AIRPORT OPERATIONS.

6. IDENTIFICATION––PERSONNEL: ALL EMPLOYEES, AGENTS, VENDORS, INVITEES, ETC. OF THE CONTRACTOR OR SUBCONTRACTORS REQUIRING ACCESS TO THE AIRCRAFT OPERATIONS AREA (AOA) SHALL, IN ACCORDANCE WITH THE AIRPORT OPERATIONS SECURITY PROGRAM, BE REQUIRED TO DISPLAY AIRPORT ISSUED IDENTIFICATION OR BE UNDER ESCORT BY PROPERLY BADGED PERSONNEL. THESE BADGES WILL BE IDENTIFIED NUMERICALLY AND ISSUED TO INDIVIDUAL EMPLOYEES WITH A PERMANENT RECORD MAINTAINED ON EACH INDIVIDUAL TO WHOM A BADGE IS ISSUED. AT THE COMPLETION OF THE CONTRACT ALL BADGES WILL BE RETURNED TO THE AIRPORT AND A CHARGE OF $50 PER BADGE WILL BE ASSESSED FOR ALL BADGES NOT RETURNED. IN ADDITION, A $65 NON–REFUNDABLE PROCESSING FEE WILL BE REQUIRED FOR EACH BADGE. THIS FEE WILL BE PAID BEFORE BADGE IS ISSUED. NO BADGE WILL BE ISSUED TO ANY PERSON UNTIL A REVIEW OF REQUIRED PAPERWORK BY AIRPORT SECURITY AND ALL REQUIREMENTS ARE MET. PAPERWORK SHALL BE SUBMITTED A MINIMUM OF 24 HOURS BEFORE ISSUANCE OF BADGE. IDENTIFIABLE HARD HATS OR OTHER IDENTIFICATION SHALL ALSO BE WORN AT ALL TIMES IF REQUIRED BY AIRPORT OPERATIONS. THE CONTRACTOR AND ITS STAFF IS RESPONSIBLE FOR ATTENDING TRAINING AND COMPLETING SECURITY BADGE APPLICATIONS, WHICH WILL INCLUDE AIR/GROUND RADIO, TAXIWAY AND AIRPORT FAMILIARIZATION. ESTIMATED TIME FOR COMPLETION IS 2 HOURS.

7. IDENTIFICATION––VEHICLES: THE CONTRACTOR, THROUGH THE CSSO, SHALL ESTABLISH AND MAINTAIN A LIST OF CONTRACTOR AND SUBCONTRACTOR VEHICLES AUTHORIZED TO OPERATE ON THE SITE AND SHALL ISSUE A PERMIT TO EACH VEHICLE TO BE MADE AVAILABLE UPON DEMAND BY AIRPORT OPERATIONS THE RPR OR ANY AIRPORT REPRESENTATIVES. A BLOCK OF VEHICLE PERMITS SHALL BE ISSUED BY AIRPORT OPERATIONS TO THE CONTRACTOR AND AT THE COMPLETION OF THE CONTRACT ALL PERMITS WILL BE RETURNED TO THE AIRPORT AND A CHARGE OF $25 PER PERMIT WILL BE ASSESSED FOR ALL PERMITS NOT RETURNED. CONTRACTOR EMPLOYEE VEHICLES SHALL BE RESTRICTED TO THE CONTRACTOR'S EMPLOYEE PARKING AREA AND ARE NOT ALLOWED ON THE AOA AT ANY TIME.

8. FINES: PAYMENT OF ALL FINES ASSESSED TO DULUTH INTERNATIONAL AIRPORT DUE TO VIOLATIONS BY THE CONTRACTOR OF FAA/TSA SECURITY OR SAFETY REQUIREMENTS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE DEDUCTED FROM MONIES DUE THE CONTRACTOR.

A. IF THE RESTRICTED AREA GATE IS FOUND TO BE OPEN OR UNLOCKED AND UNATTENDED, AIRPORT SECURITY POLICE AND/OR TSA MAY ISSUE THE CONTRACTOR A CITATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COURT COSTS IMPOSED FINES. IN ADDITION, A CHARGE OF UP TO $10,000.00 MAY BE LEVIED BY THE DULUTH AIRPORT AUTHORITY AND/OR TSA FOR EACH VIOLATION SO DOCUMENTED AND UPON THE REQUEST FOR FINAL PAYMENT THE TOTAL OF ANY SUCH CHARGES WILL BE DEDUCTED FROM MONIES DUE THE CONTRACTOR.

B. IN THE EVENT THE CONTRACTOR DEVIATES FROM THE IDENTIFIED CONSTRUCTION LIMITS AND/OR DESIGNATED HAUL ROUTES ONTO AN ACTIVE RUNWAY OR TAXIWAY THE CONTRACTOR WILL BE FINED $1,000 PER OCCURRENCE WHICH WILL BE DEDUCTED FROM THE FINAL CONTRACT AMOUNT DUE THE CONTRACTOR.

9. A MINIMUM OF 48 HOURS IN ADVANCE OF ANY EXCAVATION OR BORINGS, THE CONTRACTOR SHALL CONTACT THE FOLLOWING LOCAL CABLE OWNERS AS WELL AS A PRIVATE LOCATOR TO VERIFY ALL UNDERGROUND CABLE LOCATIONS IN THE VICINITY OF THE PROPOSED WORK:

CABLE OWNER	CONTACT PERSON	PHONE NUMBER
FEDERAL AVIATION ADMINISTRATION	ANDY GOMEZ	218–722–2826
Mn AIR NATIONAL GUARD	WORK CONTROL	218–788–7292
DULUTH AIRPORT AUTHORITY	TOM WERNER	218–727–6522
OTHERS	GOPHER STATE ONE–CALL	800–252–1166

10. RESPONSIBILITY FOR TEMPORARY LIGHTING AND MARKING

THE CONTRACTOR WILL BE RESPONSIBLE FOR FURNISHING AND MAINTAINING THE NECESSARY BARRICADES AND HAZARD LIGHTING AS REQUIRED BY THE SPECIFICATIONS TO MARK CONSTRUCTION AREAS, HAZARDS, ETC. REFLECTORIZED ORANGE PLASTIC BARRELS WITH ATTACHED FLASHING RED LIGHTS FOR NIGHT USE ARE THE PREFERRED TYPE OF BARRICADE FOR USE ON THE AIRPORT.

11. CONSTRUCTION ACTIVITY IN THE VICINITY OF NAVIGATIONAL AIDS

48 HOURS PRIOR TO THE PRE CONSTRUCTION CONFERENCE AND/OR CONSTRUCTION START, THE CONTRACTOR SHALL CONTACT THE LOCAL AIRWAY FACILITIES MANAGER AT (218) 727–2826. HE OR HIS REPRESENTATIVE WILL MEET WITH THE CONTRACTOR TO IDENTIFY FAA FACILITIES AND FAA CABLES.

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DULUTH AIRPORT AUTHORITY

DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW TERMINAL DESIGN

CONSULTANTS

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SJA ARCHITECTS
11 E Superior Street Suite 340, Duluth MN 55802
TEL: (218) 724-8578 / FAX: (218) 724-8717

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APPOLD DESIGN
2432 East First Street, Duluth MN 55812
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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: JOHN E. HIPPCHEN

Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
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SHEET TITLE

SAFETY AND SECURITY NOTES AND DETAIL

SHEET NUMBER
C002

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C002.dwg Plotted on: 4/2/2010 10:26 AM Plotted by: Erdmann, Ryan
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GENERAL NOTES

1. SAFETY AND SECURITY – SAFETY AND SECURITY IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE COORDINATED WITH DULUTH INTERNATIONAL AIRPORT AND THE ENGINEER (PART 6 – SAFETY AND SECURITY OF THE SPECIFICATIONS).

2. EXISTING UTILITY INFORMATION SHOWN ON THE PLANS CONCERNING THE TYPE, SIZE AND LOCATION WERE COMPILED BASED ON THE BEST AVAILABLE UTILITY RECORDS TO THE ENGINEER. THE CONTRACTOR SHALL VERIFY THE ACTUAL LOCATION PRIOR TO CONSTRUCTION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOWER AND/OR PROTECT ALL EXISTING UTILITIES IN PLACE UNLESS NOTED OR SPECIFIED OTHERWISE INCIDENTAL TO THIS PROJECT. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL FIELD VERIFY AND SOFT DIG TO IDENTIFY ACTUAL LOCATION AND DEPTH PRIOR TO REMOVAL AND EXCAVATION FOR ALL UTILITIES BOTH WET AND DRY.

3. CONTRACTOR UTILITIES – THE CONTRACTOR'S STAGING AREA IS SHOWN ON SHEET C005. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL UTILITIES AND HOOKUPS (SEE SPECIAL PROVISIONS). THE CONTRACTOR WILL BE REQUIRED TO COORDINATE WITH THE CITY ENGINEERING DEPARTMENT AND DULUTH INTERNATIONAL AIRPORT ON THE PRECISE LOCATION AND LIMITS OF THE STAGING AREA, AS WELL AS ANY SPECIAL REQUIREMENTS FOR FENCING, SECURITY BADGING AND ACCESSES.

4. HAUL ROUTES – THE LOCATION OF HAUL ROUTES ON THE AIRPORT SHALL BE AS SHOWN ON THE PLANS AND APPROVED BY THE CITY OF DULUTH AND THE DULUTH INTERNATIONAL AIRPORT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE OFF-SITE HAUL ROUTES WITH THE PARTY HAVING JURISDICTION OVER THE AFFECTED ROUTE. ON-SITE HAUL ROUTES WILL BE MAINTAINED BY THE CONTRACTOR AND SHALL BE RESTORED TO THEIR ORIGINAL CONDITION UPON COMPLETION OF USE AS A HAUL ROUTE. FENCING, DRAINAGE, GRADING, AND ANY OTHER WORK NECESSARY TO CONSTRUCT HAUL ROUTES ON THE AIRPORT IS THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE APPROVED BY THE ENGINEER PRIOR TO WORK.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRESERVATION OF ALL DULUTH INTERNATIONAL AIRPORT PROPERTY AND SHALL PROTECT CAREFULLY FROM DAMAGE OR DISTURBANCE ALL LAND MONUMENTS AND PROPERTY MARKERS. IF DAMAGE OR INJURY TO PROPERTY DOES OCCUR DURING THE WORK, THE CONTRACTOR SHALL RESTORE AT HIS/HER OWN EXPENSE SUCH PROPERTY TO A CONDITION EQUAL TO THAT EXISTING BEFORE SUCH DAMAGE OR INJURY WAS DONE.

6. EXCESS SOIL PLACEMENT SHALL BE OFF-SITE IN A CITY APPROVED LOCATION AND SHALL ADHERE TO ALL LOCAL LAWS AND REGULATIONS. COSTS ASSOCIATED WITH THE PLACEMENT AT THIS LOCATION SHALL BE INCLUDED IN THE COST OF REMOVAL. THE CONTRACTOR SHALL PROVIDE THE RESIDENT ENGINEER AND DULUTH INTERNATIONAL AIRPORT WITH DOCUMENTATION OF THE QUANTITY OF PLACEMENT, LOCATION AND CITY/LOCAL GOVERNMENT ACCEPTANCE.

7. ANY REMOVAL OF EQUIPMENT (TICKET DISPENSERS, PARKING LOT GATES, AND TOLL BOOTHS) ARE TO REMAIN THE PROPERTY OF DULUTH INTERNATIONAL AIRPORT UNLESS INDICATED OTHERWISE.

8. THE CONTRACTOR SHALL NOT ENTER INTO ANY PAVED OR UNPAVED AREA OUTSIDE OF THE LIMITS OF CONSTRUCTION WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.

9. DURING TIMES OF CONSTRUCTION OPERATIONS IN THE AOA, A BADGED GATE GUARD PROVIDED BY THE CONTRACTOR SHALL BE PLACED AT GATE 11V. THE GUARD SHALL CHECK FOR ENTRY UNDER THE SPECIAL PROVISIONS AND THE LATEST FAA SAFETY REGULATIONS. PROPER TRAINING AND COORDINATION WITH AIRPORT OPERATIONS WILL BE REQUIRED.

10. THE CONTRACTOR SHALL REPAIR DAMAGE TO HAUL ROUTES ON AND OFF AIRPORT PROPERTY UPON COMPLETION OF THIS PROJECT. (INCIDENTAL TO THIS PROJECT).

11. CONTRACTOR SHALL SUBMIT A PLAN (PRIOR TO CONSTRUCTION) FOR CONSTRUCTION OF EACH PHASE. THIS PLAN SHALL SHOW SUFFICIENT REMOVAL OF AC TO PLACE REQUIRED CONCRETE/ASPHALT FOR EACH PHASE. IT SHALL ALSO SHOW WHAT STEPS WILL BE TAKEN WHEN VEHICLES/EQUIPMENT ARE REQUIRED TO BE TURNED AROUND AND HAVE PASSED THE AREA OF PAVING. IT WILL ALSO SHOW WHERE EQUIPMENT IS TO BE STORED IN EACH PHASE.

12. SHOULD ANY ITEM IN THESE PLANS CONFLICT WITH THE TECHNICAL SPECIFICATIONS, THE SPECIFICATIONS SHALL GOVERN.

13. THE CONTRACTOR SHALL BE GIVEN A SPECIFIC NUMBER OF CALENDAR DAYS TO PERFORM THE WORK AND IF THE CONTRACTOR DOES NOT COMPLETE THE CONSTRUCTION WITHIN THAT TIME FRAME, LIQUIDATED DAMAGES WILL BE ASSESSED UNLESS THE CONTRACTOR CAN SHOW JUST CAUSE FOR ANY DELAYS. IF THE ENGINEER, OR AIRPORT MANAGEMENT FEELS THAT CONSTRUCTION IS PROCEEDING AT TOO SLOW A PACE, THE ENGINEER SHALL NOTIFY THE CONTRACTOR IN WRITING AND THE CONTRACTOR SHALL BE REQUIRED TO RESPOND IN WRITING JUSTIFYING THE IDENTIFIED DELAYS AND/OR LACK OF ADEQUATE EQUIPMENT. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE JUSTIFICATION FOR WAIVING OF ANY LIQUIDATED DAMAGES CHARGED TO THE CONTRACTOR.

14. THE CONTRACTOR SHALL, AT ALL TIMES, COORDINATE HIS EFFORTS WITH THE ENGINEER. IF ANY PROBLEMS ARISE DURING THE CONSTRUCTION SEQUENCING, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER TO HELP RESOLVE SAID PROBLEMS PRIOR TO CONTINUING THE WORK.

15. THE CONTRACTOR SHALL PERFORM ALL FINAL CLEANUP WORK PRIOR TO A FINAL INSPECTION. THE CONTRACTOR SHALL ALSO CONTINUOUSLY CLEAN UP DURING EACH PHASE OF THE PROJECT.

16. THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT HIS RECOMMENDED FIELD OPERATIONS AREAS FOR STORAGE OF EQUIPMENT, SUPPLIES AND FIELD OFFICES TO THE ENGINEER AND AIRPORT MANAGER AT THE PRECONSTRUCTION CONFERENCE FOR REVIEW, COMMENTS AND/OR APPROVAL. ANY AREAS RECOMMENDED FOR STORAGE OF EQUIPMENT OVERNIGHT, FOR STORAGE OF FUELING FACILITIES, MATERIALS AND OFFICES SHALL BE APPROVED BY THE AIRPORT MANAGEMENT AND ENGINEER PRIOR TO MOBILIZATION OF ANY EQUIPMENT OR FIELD OFFICES AND CERTIFIED BY THE CONTRACTOR THAT THE FACILITIES MEET ALL APPLICABLE LOCAL, STATE, AND FEDERAL REQUIREMENTS.

17. ANY AREAS UTILIZED AS FIELD OPERATIONS AREAS SHALL BE MAINTAINED AT ALL TIMES IN A CLEAN AND ENVIRONMENTALLY SAFE CONDITION. IF THE CONTRACTOR MUST UTILIZE AGGREGATE BASE MATERIALS TO PROVIDE A STABLE SURFACE FOR EQUIPMENT STORAGE, THEN ANY MATERIALS UTILIZED WILL BE REMOVED AT THE END OF THE PROJECT AND DISPOSED OF AT A LOCATION ACCEPTABLE TO THE OWNER. A STABLE BASE EXTENDING FROM EXISTING PAVEMENT, NOT SCHEDULED FOR RECONSTRUCTION, TO THE FIELD OFFICES SHALL BE PROVIDED FOR CLEAN ACCESS.

18. APPROPRIATE EROSION CONTROL MEASURES SHALL BE ACCOMPLISHED PRIOR TO BEGINNING THE RESPECTIVE PHASE. REMOVAL OF TEMPORARY EROSION CONTROL SHALL BE ACCOMPLISHED BY THE CONTRACTOR EITHER AT THE COMPLETION OF THE ASSOCIATED PHASE OR THEREAFTER AS DIRECTED BY THE RPR.

19. THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE MULTIPLE CREWS AND WORK EXTENDED HOURS TO ACCOMPLISH AND COMPLETE THE WORK WITHIN THE ALLOTTED TIME.

20. PERMITS: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN AND PAY FOR ALL APPLICABLE PERMITS FOR CONSTRUCTION AND EQUIPMENT.

21. COORDINATION OF CONSTRUCTION ACTIVITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONSTANT COORDINATION BETWEEN THE SUBCONTRACTORS AND THE ENGINEER. ALL CONSTRUCTION ACTIVITIES PLANNED BY THE CONTRACTOR SHALL BE REVIEWED AND APPROVED BY THE ENGINEER AND AIRPORT OPERATIONS REPRESENTATIVES.

22. STAGING AREAS: ALL STAGING AND VEHICLE PARKING AREAS SHALL BE FINALIZED BY AIRPORT MANAGEMENT, AT THE PRE-CONSTRUCTION MEETING.

23. EXISTING CONDITIONS: THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING ROADS, SOD, ETC PER THE GENERAL PROVISIONS OF THE SPECIFICATIONS.

LEGEND

- 2/C #6 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 4/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 2/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- UED — PROPOSED CONDUIT DUCTS
- OHE — PROPOSED OVERHEAD ELECT.
- OE — EXISTING OVERHEAD ELECT.
- EXISTING POWER POLE
- PROPOSED POWER POLE
- PROPOSED ELECT. MANHOLE
- PROPOSED LIGHT POLES
- PROPOSED PHONE PEDESTAL
- PROPOSED COMM MANHOLE
- UE — EXISTING UNDERGROUND ELECT.
- E — EXISTING –PRIVATE– ELECT.
- EXISTING LIGHT & POLE
- UT — PROPOSED PHONE CABLES
- UT — EXISTING PHONE CABLES
- UTV — EXISTING CATV CABLES
- FO — EXISTING FIBER OPTIC CABLE
- EXISTING PARKING GATE
- EXISTING ELECT. MANHOLE
- W — PROPOSED WATERMAIN
- W — EXISTING WATERMAIN
- S — EXISTING SANITARY
- SAN — PROPOSED SANITARY
- SAN — EXISTING SANITARY MANHOLE
- PROPOSED SANITARY MANHOLE
- UG — EXISTING GAS LINE
- GAS — PROPOSED GAS LINE
- EXISTING HYDRANT
- PROPOSED HYDRANT
- PROPOSED WATER VALVE
- WV — EXISTING WATER VALVE
- PROPOSED STORM PIPE
- PROPOSED EDGE DRAINS
- EXISTING STORM PIPE

DEMOLITION

- CLEAR ISOLATED TREE
- CLEARING AND GRUBBING
- EXISTING TREES TO REMAIN
- EXISTING BITUMINOUS PAVEMENT REMOVAL
- EXISTING CONCRETE PAVEMENT REMOVAL
- EXISTING CURB REMOVAL
- DEMOLISH EXISTING BUILDING
- SAWCUT BITUMINOUS PAVEMENT (FULL DEPTH)

GRADING AND EROSION CONTROL LEGEND

- 1270 — PROPOSED MAJOR CONTOUR (5')
- 1267 — PROPOSED MINOR CONTOUR (1')
- —1270— EXISTING MAJOR CONTOUR (5')
- —1268— EXISTING MINOR CONTOUR (1')
- PROPOSED GRADING LIMITS
- SF — SILT FENCE TYPE: MACHINE SLICED
- SF — SILT FENCE TYPE: HEAVY DUTY
- SF — SILT FENCE TYPE: SUPER DUTY
- BIOROLL
- CRITICAL ZONE
- CLASS III RIP RAP W/ TYPE V FABRIC
- CATEGORY 2 EROSION BLANKET
- RAPID STABILIZATION METHOD #4 (SPEC 2575.3)
- TYPE 6 HYDRO MULCH (SPEC 5884)
- SOD
- CLASS IV RIP RAP W/TYPE IV FABRIC AT SLOPES

ABBREVIATIONS

AB	AGGREGATE BASE COURSE
AC	ADVISORY CIRCULAR OR ASPHALTIC CONCRETE
APPROX	APPROXIMATE
ARFF	AIRCRAFT RESCUE FIRE FIGHTING
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ATCT	AIR TRAFFIC CONTROL TOWER
BC	BEGIN CURVE
BVC	BEGIN VERTICAL CURVE
CFS	CUBIC FEET PER SECOND
CTB	CEMENT TREATED BASE
CY	CUBIC YARDS
DAA	DULUTH AIRPORT AUTHORITY
DIA	DIAMETER
E	EASTING, ELECTRICAL OR EAST
EA	EACH
EC	END CURVE
EL	ELEVATION
EVC	END VERTICAL CURVE
EXIST	EXISTING
FAA	FEDERAL AVIATION ADMINISTRATION
FH	FIRE HYDRANT
FL	FLOWLINE
G	GAS
GA	GAUGE
GAL	GALLON
HP	HIGH POINT
HORZ	HORIZONTAL
ILS	INSTRUMENT LANDING SYSTEM
KV	KILOVOLT
LF	LINEAR FEET
LS	LUMP SUM
LT	LEFT
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
N	NORTHING OR NORTH
NAVD	NORTH AMERICAN VERTICAL DATUM
NO	NUMBER
NOTAM	NOTICE TO AIRMEN
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
PAPI	PRECISION APPROACH PATH INDICATOR
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PROP	PROPOSED
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
RGRCP	RUBBER GASKET REINFORCED CONCRETE PIPE
R	RADIUS
RT	RIGHT
R/W	RUNWAY
ROW	RIGHT-OF-WAY
RWY	RUNWAY
S	SLOPE OR SOUTH
SF	SEMI-FLUSH OR SQUARE FEET
STA	STATION
STD	STANDARD
SY	SQUARE YARDS
TWY	TAXIWAY
T/W	TAXIWAY
TYP	TYPICAL
VASI	VISUAL APPROACH SLOPE INDICATOR
VERT	VERTICAL
W	WEST OR WATER

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Print Name: JOHN E. HIPPCHEN

Signature: John E. Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
GENERAL CONSTRUCTION NOTES, LEGEND, AND ABBREVIATIONS

SHEET NUMBER
C003

90% NOT FOR CONSTRUCTION

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T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C003.dwg, 4/2/2010 10:27:18 AM

RUNWAY 9–27

RUNWAY 3/21

TAXIWAY "A–5"

TAXIWAY "A"

TAXIWAY "D"

FUTURE AIRFIELD APRON

EXISTING AIRPORT SECURITY FENCE

FIELD ACCESS ROAD

EXISTING TERMINAL

EMPLOYEE LOT

EMPLOYEE RD (CARGO RD.)

AIRPORT SECURITY FENCE

PROPOSED TEMPORARY ROAD

EMPLOYEE LOT ROAD

EXISTING GRINDEN DRIVE

RENTAL PARKING

PROPOSED TERMINAL

PROPOSED EMPLOYEE LOT

HAINES ROAD

CELL PHONE LOT

FUTURE RENTAL PARKING

PROPOSED GRINDEN DRIVE

LOWER ACCESS ROAD

GRINDEN DRIVE

SHORT TERM PARKING

PARKING ROAD

SOUTH PERIMETER ROAD

PROPOSED ENGINEERED SECTION

PROPOSED LONG TERM PARKING

EXISTING BUILDING

LONG TERM PARKING

MILLER CREEK

AIRFIELD ACCESS

PROPOSED TEMPORARY ROAD

LONG TERM PARKING

WETLAND

RETENTION PONDS

AIRPORT SECURITY FENCE

GRINDEN DRIVE

AIRPORT ROAD

WETLAND

MILLER CREEK

HAINES ROAD

NORTH

N

0 100' 200'

ULTIMATE DEVELOPMENT SITE PLAN NOTES:

1. THIS DRAWING DEPICTS EXISTING CONDITIONS, WORK PROPOSED TO BE ACCOMPLISHED UNDER THIS CONTRACT, AND FUTURE DEVELOPMENT THAT IS NOT INCLUDED IN THIS CONTRACT. THIS DRAWING IS PRESENTED FOR CONTRACTOR'S INFORMATION ONLY, TO REPRESENT HOW THE CONTRACT WORK RELATES TO EXISTING CONDITIONS AND THE ULTIMATE DEVELOPMENT.

2. WHERE THE WORD "FUTURE" IS USED IN THESE DOCUMENTS, IT REPRESENTS ELEMENTS OF THE PROJECT NOT INCLUDED IN THIS CONTRACT, BUT IS PROVIDED FOR INFORMATION PURPOSES ONLY.

3. WHERE THE WORD "PROPOSED" IS USED IN THESE DOCUMENTS, IT REPRESENTS ELEMENTS OF THE PROJECT INCLUDED IN THIS CONTRACT FOR INSTALLATION, CONSTRUCTION, OR MODIFICATION AS SHOWN IN THE PLANS AND SPECIFICATIONS.

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Signature: John E Hippchen

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NO.	DESCRIPTION	DATE

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DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

ULTIMATE DEVELOPMENT SITE PLAN

SHEET NUMBER

C004

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CONTRACT LAYOUT PLAN NOTES

1.) PROJECT DESCRIPTION: THIS CONTRACT PROVIDES THE SECOND PHASE OF CONSTRUCTION FOR THE NEW REPLACEMENT TERMINAL DEVELOPMENT AT DULUTH INTERNATIONAL AIRPORT. SEVERAL OTHER PHASES OF CONSTRUCTION ARE BEING BID SEPARATELY, SOME OF WHICH WILL OVERLAP THE WORK AREAS AND THE CONSTRUCTION LIMITS OF THIS CONTRACT. FOR CLARITY, PORTIONS OF THE FUTURE WORK NOT INCLUDED IN THIS CONTRACT ARE ILLUSTRATED FOR INFORMATIONAL PURPOSES ONLY.

2.) SCOPE OF WORK: THE SCOPE OF WORK FOR THIS CONSTRUCTION SPECIFICALLY INCLUDES, BUT IS NOT LIMITED TO, TEMPORARY & PERMANENT FENCE INSTALLATION AND REMOVAL; BUILDING DEMOLITION & BUILDING SALVAGE; EXCAVATION AND EMBANKMENT WITHIN LIMITS OF GRADING SHOWN ON PLANS; INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROL DEVICES; CONSTRUCTION OF SITE DRAINAGE COMPONENTS INCLUDING, INLETS, MANHOLES AND CULVERTS, CONSTRUCTION OF ASPHALT ROADWAYS AND PARKING LOTS; SITE ELECTRICAL AND ROADWAY AND PARKING LIGHTING; DEMOLITION OF POWER AND CONTROL CABLES FOR EXISTING PARKING CONTROL DEVICES; TOLL BOOTH CONSTRUCTION; SITE UTILITIES THAT SHALL INCLUDE SANITARY PIPE & SANITARY MANHOLES, WATERLINES, VALVES AND HYDRANTS, AND GAS LINES.

3.) HAUL ROUTES; LOCATION OF HAUL ROUTES SHALL BE SPECIFIED ON THE PLANS OR AS APPROVED BY ENGINEER. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO COORDINATE OFF-SITE HAUL ROUTES (STATE HIGHWAYS, COUNTY ROADS, OR CITY STREETS) WITH APPROPRIATE AGENCY.

4.) HAUL ROUTES SHALL BE MAINTAINED BY THE CONTRACTOR AND SHALL BE RESTORED TO THEIR ORIGINAL CONDITION UPON COMPLETION OF CONSTRUCTION.

5.) CONTRACTOR MUST AT ALL TIMES BE AWARE THAT THIS SITE IS AN ACTIVE AIRPORT TERMINAL, CONTRACTOR SHALL NOT BLOCK TRAFFIC TO TERMINAL OR EXISTING PARKING AREAS DURING CONSTRUCTION. SEE PHASING PLAN FOR OFF-PEAK CONSTRUCTION TIMES AND PHASING OF CONSTRUCTION.

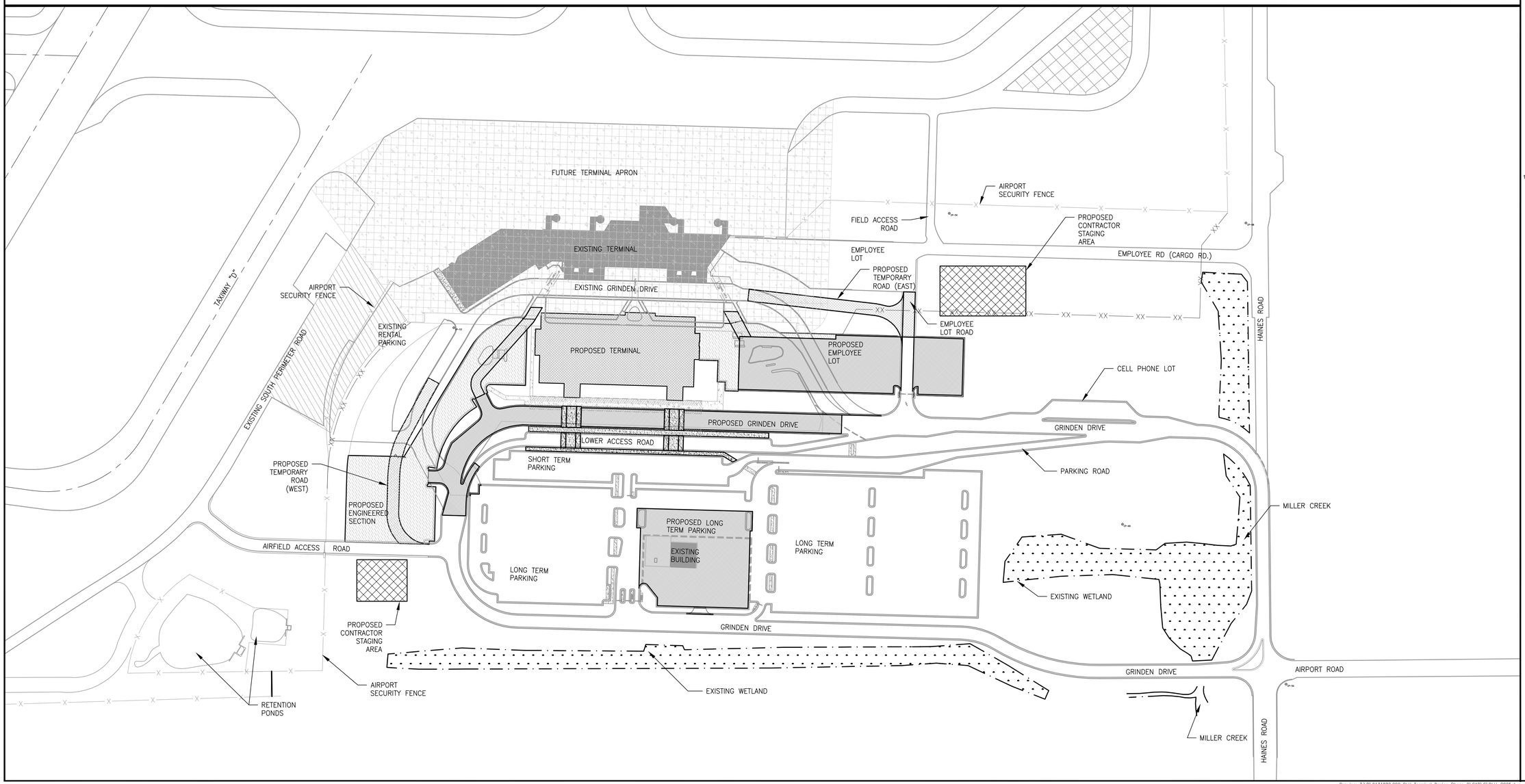
6.) CONTRACTOR SHALL KEEP PUBLIC SAFE BY BARRICADING OR FENCING OF EXCAVATIONS AND CONSTRUCTION ACTIVITIES FROM TERMINAL TRAFFIC AND PEDESTRIAN TRAFFIC.

LEGEND

- PROPOSED MAJOR CONTOUR (5')
- PROPOSED MINOR CONTOUR (1')
- PROPOSED GRADING LIMITS
- PROPOSED CONTRACTOR STAGING AREA
- PROPOSED BITUMINOUS ROAD OR PARKING
- PROPOSED GRADING AREA
- PROPOSED TERMINAL
- EXISTING TERMINAL & BUILDINGS
- FUTURE APRON (N.I.C.)
- EXISTING WETLANDS

NORTH

0 100' 200'



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NO.	DESCRIPTION	DATE

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DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

CONTRACT LAYOUT PLAN AND CONTRACT NOTES

SHEET NUMBER

C005

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Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C005.dwg Plotted on: 4/2/2010 10:29 AM Plotted by: Erdmann, Ryan

HORIZONTAL AND VERTICAL CONTROL POINTS

NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP-DLHA	N:452663.9980	E:2854470.1940	1404.7870	DLHA IS A STEEL ROD SET 0.5' BELOW GROUND IN A 6" PVC CASING 12' EAST OF AIRPORT SECURITY FENCE CORNER OF RENTAL CAR LOT.
CP-53	N:452925.0290	E:2854589.0160	1408.9110	CP-53 IS A 24" #5 REBAR SET FLUSH WITH GROUND, 2' SOUTH AND 5' WEST OF CURB RETURN AT THE NE CORNER OF RENTAL CAR PARKING LOT.
CP-54	N:453158.7960	E:2855600.7680	1409.9660	CP-54 IS A 24" #5 REBAR SET FLUSH WITH GROUND, IS 12' SOUTH OF SECURITY FENCE AND 10' EAST OF FIELD ACCESS RD. OFF OF THE NORTH SIDE OF THE EMPLOYEE PARKING ACCESS RD AT JOG IN FENCE.
CP-55	N:452196.8330	E:2856288.0920	1375.4790	CP-55 IS A 24" #5 REBAR SET FLUSH WITH GROUND, 2" SOUTH OF CURB RETURN AT THE SE QUADRANT OF HAINES RD. AND AIRPORT RD. INTERSECTION.
CP-68	N:453139.0790	E:2856206.3810	1381.9770	CP-68 IS A 24" #5 REBAR SET 0.1' BELOW GROUND, 6' EAST OF GUARDRAIL AT THE NW QUADRANT OF HAINES RD. AND THE CARGO RD. NOW THE EMPLOYEE PARKING RD. INTERSECTION.
CP-69	N:452523.4520	E:2855954.1440	1377.7660	CP-69 IS A 24" #5 REBAR SET FLUSH WITH GROUND ON THE SOUTH SIDE OF THE F-4 AIRCRAFT DISPLAY, IT IS 15' SOUTH OF THE TIP OF THE SOUTHERLY WING.

NOTES:
1. ULTIMATE DEVELOPMENT SHOWN FOR INFORMATION.
2. CONTROL POINT INFORMATION PROVIDED BY RLK-INCORPORATED DATE: 03-09-2009
3. ANY EXTRA CONTROL POINTS NEEDED SHALL BE SET BY CONTRACTOR & MAINTAINED

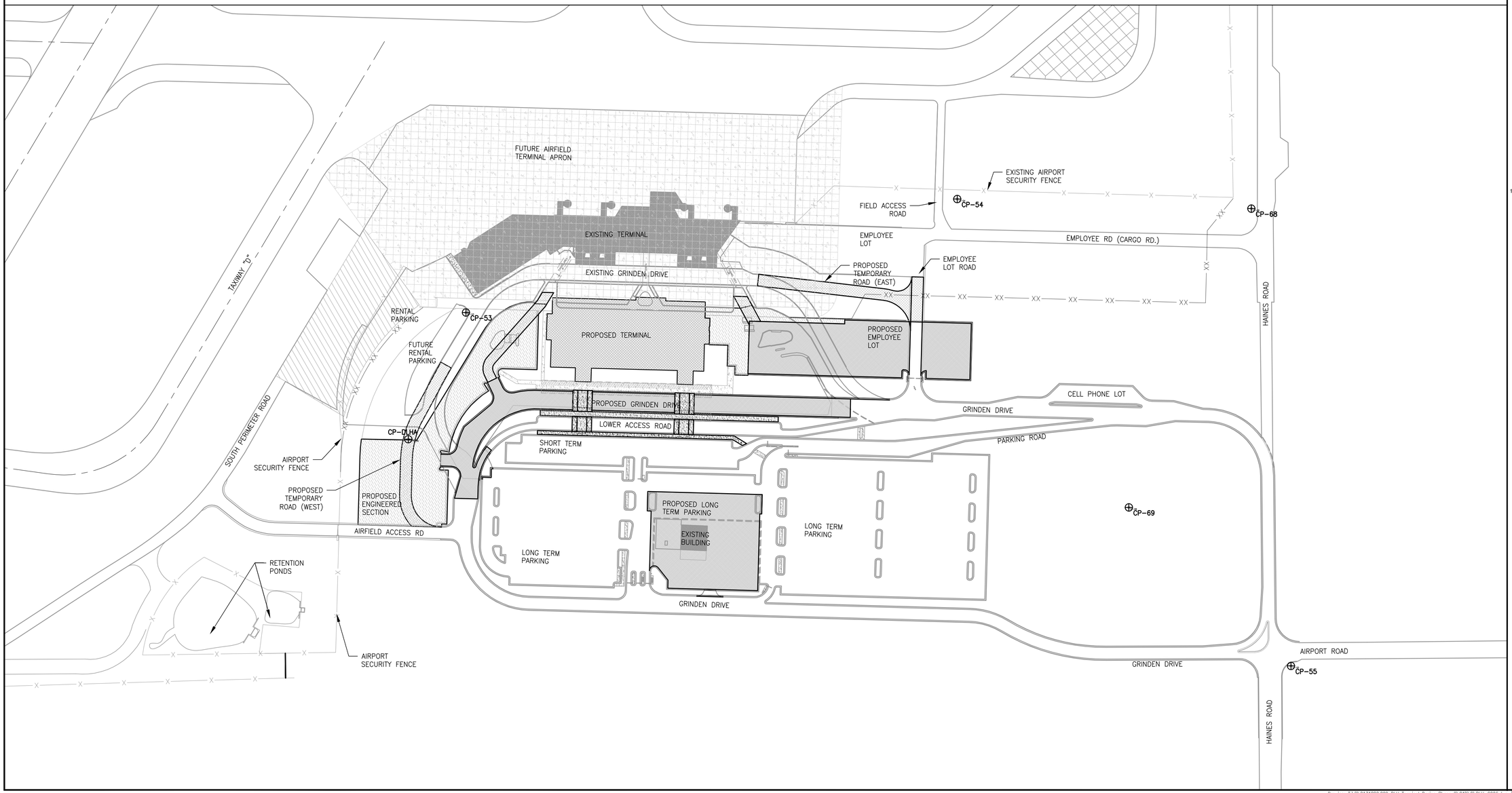
LEGEND

⊕ CP-01 CONTROL POINT LOCATION

NOTE:
ALL NORTHINGS, EASTINGS AND ELEVATIONS LABELED ON THESE PLANS ARE IN:
MINNESOTA STATE PLANE NORTH (1996)
VERTICAL DATUM IS NAVD 88
HORIZONTAL DATUM IS NAD83

NORTH

0 100' 200'



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SHEET TITLE

HORIZONTAL AND VERTICAL CONTROL PLAN AND NOTES

SHEET NUMBER

C006

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LEGEND

8 — 30 SCALE LAYOUT

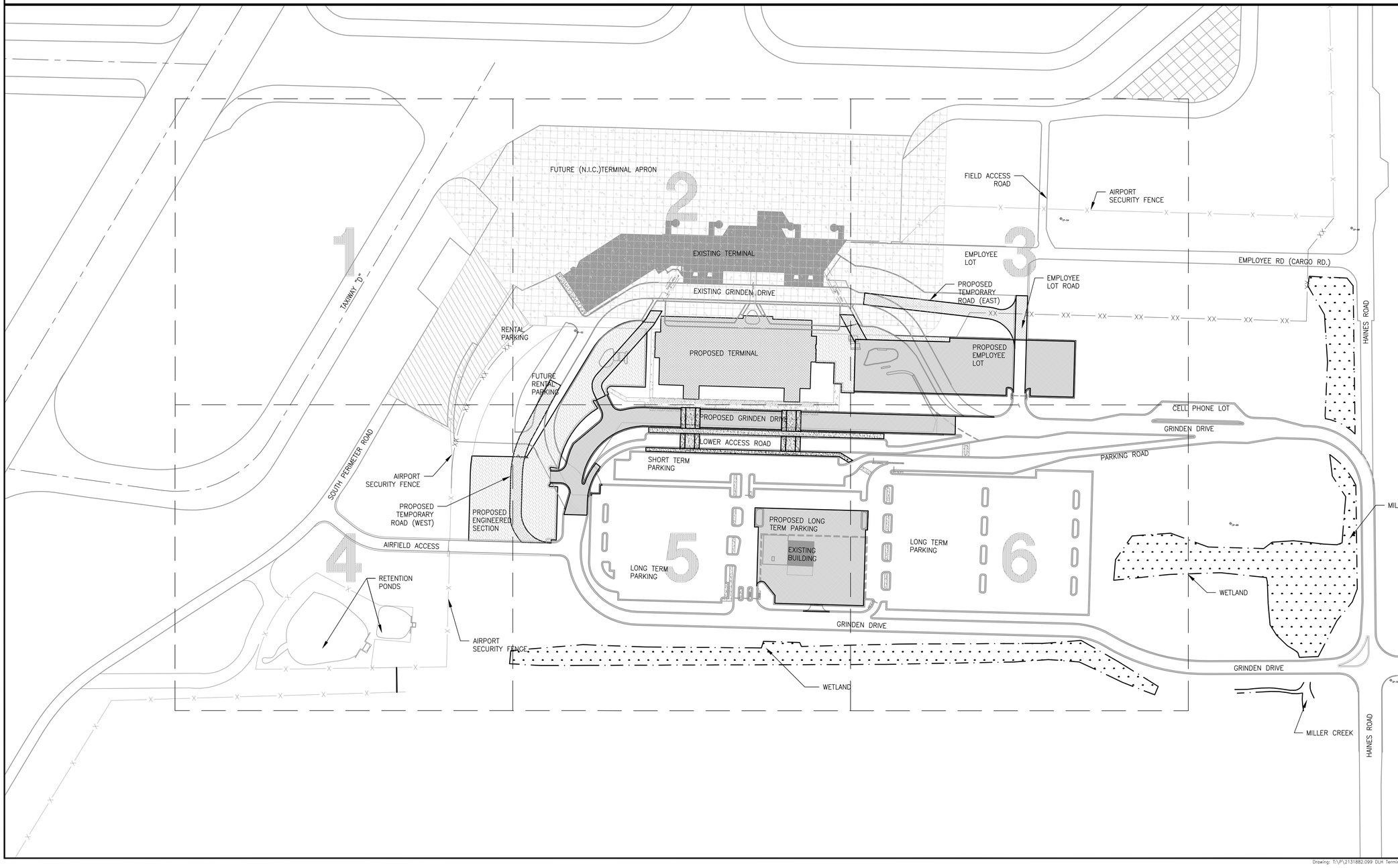
EXISTING ELEMENT

PROPOSED ELEMENT

NORTH

0 100' 200'

SHEETS ARE NUMBER THIS PLAN SET:
(X)00 IS THE OVERVIEW 100 SCALE SHEETS
(X)01–(X)06 ARE THE 30 SCALE SHEETS



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SHEET TITLE

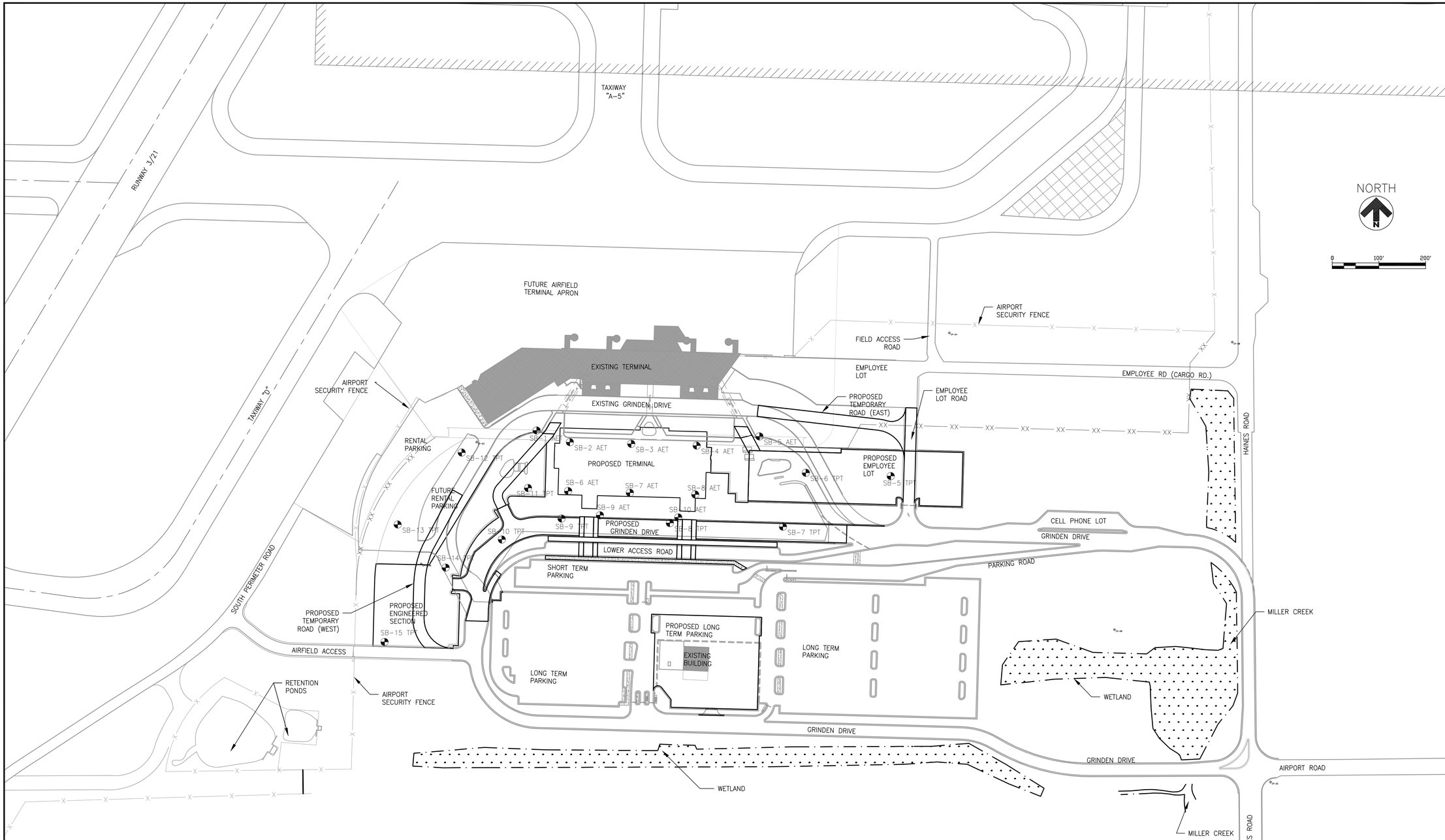
SHEET LAYOUT PLAN CIVIL SITE

SHEET NUMBER

C007

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LEGEND

SB-1 SOIL BORING LOCATION

EXISTING WETLAND

NOTE: SEE SOIL BORING INFORMATIONAL DATA SHEETS IN SPECIFICATIONS

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SHEET TITLE
GEOTECHNICAL BORING LAYOUT AND INFORMATION

SHEET NUMBER
C008

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P:\2131882.099 Dlh Terminal Design Phase 2\CAD\Dwg\DLH-C008.dwg, 4/2/2010 10:33:39 AM

PHASE 1:
1. REMOVE AND REINSTALL PAVEMENT MARKINGS IN EXISTING EMPLOYEE LOT.
2. CONSTRUCT CURB CUT/RAMP IN EXISTING SIDEWALK INTO EXISTING EMPLOYEE PARKING LOT. INSTALL RAMP ON EAST EDGE OF SIDEWALK FROM LOWER ACCESS ROAD TO EXISTING PARKING.
3. INSTALL TEMPORARY FENCE & CONSTRUCTION GATE ON WESTSIDE OF THE EAST TUNNEL, NORTHSIDE OF LOWER ACCESS ROAD, AND 30' EAST OF CURB AND GUTTER OF EXISTING PARKING LOT.
4. INSTALL ORANGE CONSTRUCTION FENCE TO DELINIATE PEDSTRIAN TRAFFIC FROM VEHICLE TRAFFIC IN TUNNEL ACCESS AREAS.
5. RELOCATE/INSTALL ACCESS CONTROLS FOR BOTH EAST AND WEST TUNNEL ENTRANCES INTO RETAINING WALLS OF EXISTING TERMINAL.
6. INSTALL SIGNAGE TO DIRECT BASEMENT PARKING TENANTS TO TUNNELS. SIGNS WILL REMAIN COVERED UNTIL TRAFFIC IS REDIRECTED.
7. CONSTRUCT 40'x30' CROSSOVER ON SOUTHWEST SIDE OF PARKING LOT WITH 12 INCHES OF CLASS 5 AND 4 INCHES OF BITUMINOUS PAVEMENT.

PHASE 2A:
1. BEGIN DEMOLITION PER THE DEMOLITION SHEETS (CURB/GUTTER, GUARD RAIL, CLEARING/GRUBBING, ELECTRICAL, BITUMINOUS AND CONCRETE PAVEMENT, SANITARY AND STORM SEWER, AND WATER) IN CENTER PORTION OF EXISTING PARKING LOT.
2. INSTALL ALL UTILITIES WITHIN PHASE 2 AREA, INCLUDING GAS, WATER, STORM SEWER, SANITARY SEWER, AND ELECTRICAL.
3. BEGIN EXCAVATION/CONSTRUCTION FOR FOOTINGS/FOUNDATION. GRIDLINES 6 THROUGH 12 SHALL BE COMPLETED BEFORE
4. MAINTAIN PEDESTRIAN AND VEHICLE ACCESS TO EAST AND WEST TUNNELS.
5. AFTER COMPLETION OF CANOPY FOUNDATIONS, CONSTRUCTION OF THE PROPOSED GRINDEN DRIVE SHALL COMMENCE.
6. CONSTRUCT STORM SEWER AND ELECTRICAL ADJACENT TO WEST TEMPORARY ROAD AND PORTION OF ENGINEERED SECTION.
7. CONSTRUCT WEST TEMPORARY ROAD AND PORTION OF ADJACENT ENGINEERED SECTION.

PHASE 2B:
1. COMPLETE THE TIE IN OF WEST TEMPORARY ROAD TO THE EXISTING GRINDEN DRIVE. (OFF PEAK CONSTRUCTION)
2. REDIRECT TRAFFIC TO WEST TEMPORARY ROAD.

PHASE 3:
1. CLOSE WEST TUNNEL ENTRANCE.
2. DEMOLISH TEMPORARY FENCES, CURB/GUTTER, STORM SEWER AND BITIMINOUS PAVMEMENT AT WEST 30' OF EXISTING PARKING LOT.
3. COMPLETE STORM SEWER MODIFICATIONS ADJACENT TO EAST TEMPORARY ROAD.
4. MAINTAIN AT LEAST ONE LANE OF TRAFFIC TO EXISTING EMPLOYEE PARKING LOT.
5. COMPLETE LIGHTING ADJACENT TO THE EAST TEMPORARY ROAD.
6. CLEAR AND GRUB AREA ADJACENT TO EAST TEMPORARY ROAD AS SHOWN ON DEMOLITION SHEETS.
7. CONSTRUCT EAST TEMPORARY ROAD.

PHASE 3B:
1. COMPLETE EAST TEMPORARY ROAD TIE IN. (OFF PEAK CONSTRUCTION.)
2. REDIRECT TRAFFIC TO EAST TEMPORARY ROAD.

PHASE 4:
1. BEFORE PHASE 4 CAN BEGIN ACCESS TO THE CENTER OR WEST TUNNEL ENTRANCE MUST BE RESTORED.
2. CLOSE EAST TUNNEL.
3. DEMOLISH TEMPORARY FENCES ON EAST SIDE OF PARKING LOT.
4. BEGIN DEMOLITION OF EXISTING CURB/GUTTER, CONCRETE AND BITUMINOUS PAVEMENTS, STORM SEWER AS PLANNED.
5. COMPLETE UTILITIES.
6. CONSTRUCT PROPOSED EMPLOYEE LOT.
7. COMPLETE GRINDEN DRIVE AND LOWER ACCESS ROAD.

PHASE 5:
1. PERMENANT FENCING TO TAKE PLACE AT ANY TIME DURING THE CONTRACT TIME.
2. FORMER HERTZ BUILDING DEMOLITION AND WORK IN THE HERTZ BUILDING AREA CAN TAKE PLACE DURING ANY TIME OF THE CONTRACT.

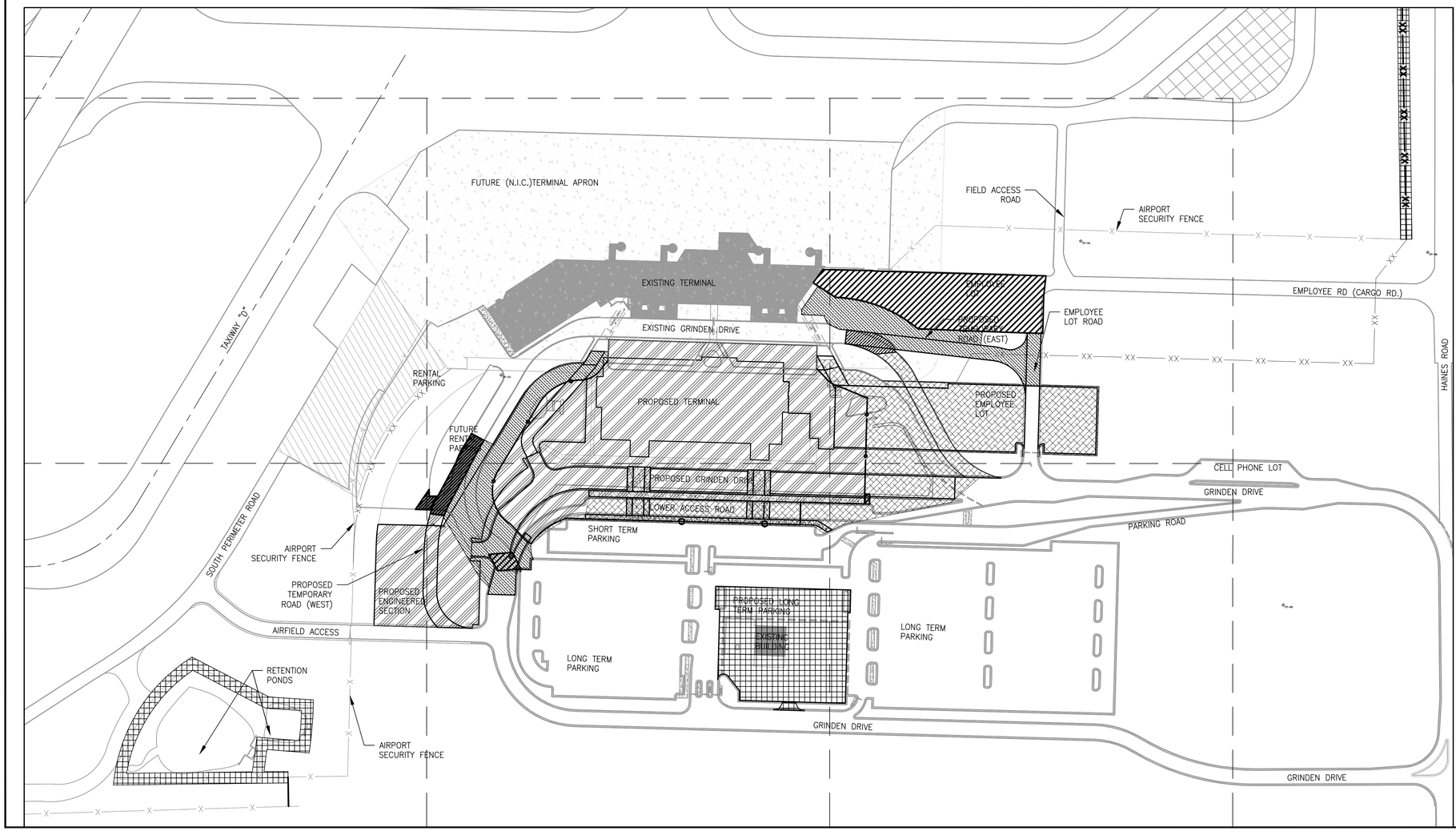
NORTH

0 100' 200'

LEGEND

- PHASE 1 CONSTRUCTION LIMITS
- PHASE 2A CONSTRUCTION LIMITS
- PHASE 2B (OFF PEAK) CONSTRUCTION LIMITS
- PHASE 3A CONSTRUCTION LIMITS
- PHASE 3B (OFF PEAK) CONSTRUCTION LIMITS
- PHASE 4 CONSTRUCTION LIMITS
- PHASE 5 CONSTRUCTION LIMITS

NOTE: TEMPORARY FENCE INSTALLED ON EXISTING PAVEMENTS TO REMAIN SHALL NOT BE ANCHORED TO THE PAVEMENT. FENCE POSTS IN THOSE AREAS SHALL BE MOUNTED IN WEIGHTED BASES.



PHASING NOTES

1. THE CONTRACTOR SHALL SUBMIT A TEMPORARY TRAFFIC CONTROL PLAN PRIOR TO CONSTRUCTION. THE TRAFFIC CONTROL PLAN SHALL COMPLY WITH PART 6 OF THE MINNESOTA MANUAL OF UTCD. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY TRAFFIC CONTROL SIGNAGE, WHICH SHALL BE REMOVED AFTER CONSTRUCTION. VEHICLE ACCESS TO TERMINAL, EMPLOYEE PARKING LOT, AND RENTAL PARKING LOT SHALL BE MAINTAINED AT ALL TIMES.

2. THE CONTRACTOR SHALL COMPLETE ALL PAVING OPERATIONS PRIOR TO OCTOBER 15, 2010.

3. PRIOR TO STARTING ANY WORK THAT WILL IMPACT UTILITIES OR ACCESS TO THE TERMINAL AND PARKING LOT AREAS, THE CONTRACTOR WILL COORDINATE THE WORK SCHEDULE WITH THE ENGINEER. ANY OUTAGES OF UTILITIES SHALL BE SCHEDULED 48 HOUR IN ADVANCE IN WRITING TO ENGINEER AND OWNER/TENATS.

4. DEMOBILIZATION AND SITE RESTORATION SHALL BE TO THE SATISFACTION OF THE OWNER PRIOR TO FINAL RELEASE OF PAYMENT.

5. AT LEAST ONE ACCESS TO EXISTING TERMINAL BASEMENT SHALL BE VEHICLES AND PEDESTRIANS AT ALL TIMES.

TRAFFIC CONTROL NOTES

1) THE CONTRACTOR IS REQUIRED TO SUBMIT A DETAILED TRAFFIC CONTROL PLAN FOR EACH PHASE OF CONSTRUCTION PRIOR TO STARTING CONSTRUCTION FOR THAT PHASE.

2) TRAFFIC FLOW TO EXISTING TERMINAL AND PARKING SHALL BE MAINTAINED AT ALL TIMES. OFF PEAK HOURS AT AIRPORT ARE MIDNIGHT TO 5:00 AM.

3) THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN THE DEVICES IN THEIR SUBMITTED AND APPROVED TRAFFIC CONTROL PLAN UNLESS OTHERWISE NOTED.

4) ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES INCLUDING "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS"--MAY 2005 W/(2007-2009 UPDATES).

5) FIELD CONDITIONS MAY REQUIRE MODIFICATIONS OF THIS LAYOUT AS DEEMED NECESSARY BY THE ENGINEER.

6) THE NUMBER AND PLACEMENT OF TRAFFIC CONTROL DEVICES WILL DEPEND UPON THE SEQUENCE OF THE CONTRACTORS OPERATION.

7) THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ANY WORK AREAS NEAR TRAFFIC IN ACCORDANCE WITH MMUTCD.

8) IF THE CONTRACTOR DECIDES TO PERFORM THE CONSTRUCTION WORK IN A SEQUENCE OTHER THAN SHOWN IN THIS PHASING PLAN, THE CONTRACTOR SHALL PROVIDE COMPLETE REVISED TRAFFIC CONTROL PLANS TO BE APPROVED BY THE ENGINEER.

9) ALL TRAFFIC CONTROL DEVICES, INCLUDING SIGNS ON ROADS OPEN TO TRAFFIC THAT ARE NOT CONSISTENT WITH TRAFFIC OPERATION, SHALL BE COVERED, REMOVED OR REVISED AS DIRECTED BY THE ENGINEER.

10) "ROAD WORK AHEAD" SIGNS SHALL BE MOUNTED APPROX. 300 FT (1 BLOCK) IN ADVANCE OF THE CONSTRUCTION AND SHALL HAVE A TYPE "A" LOW INTENSITY FLASHING AMBER WARNING LIGHT MOUNTED ON THEM.

11) "ROAD CLOSED AHEAD" SIGNS SHALL BE ERECTED APPROX. 300 FT (1 BLOCK) IN ADVANCE OF THE CLOSURE.

12) "ROAD CLOSED TO THRU TRAFFIC" SIGNS SHALL BE INSTALLED ON TYPE III BARRICADES AND SHALL BE LOCATED AT A POINT IN THE STREET AS TO PERMIT LOCAL TRAFFIC USE BUT EFFECTIVELY DISCOURAGE THRU TRAFFIC USE.

13) WHEN A "ROAD CLOSED TO THRU TRAFFIC" SIGN IS USED, THE "STOP" OR "YIELD" SIGN AT THAT INTERSECTION SHALL BE LEFT IN PLACE OR MOVED TO A SUITABLE LOCATION WHERE THE DRIVER CAN STILL SEE THE SIGN.

14) "ROAD CLOSED" SIGNS MAY BE USED WHERE THE ROADWAY IS CLOSED TO ALL TRAFFIC EXCEPT CONTRACTOR'S EQUIPMENT OR OFFICIALLY AUTHORIZED VEHICLES.

15) TYPE "A" LOW INTENSITY AMBER WARNING LIGHTS SHALL BE MOUNTED ON ALL ADVANCE WARNING SIGNS AND ON ALL TYPE I AND TYPE III BARRICADES WHEN USED AT NIGHT OR TO IDENTIFY HAZARDS.

16) ADDITIONAL SIGNING MAY BE REQUIRED FOR SEPARATE LANE CLOSURES.

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: JOHN E. HIPPCHEN

Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: RDRE
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

OVERALL PHASING PLAN

SHEET NUMBER

C050

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C050.dwg Plotted on: 4/27/2010 2:50 PM Plotted by: Erdmann, Ryan
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DEMOLITION NOTES

1. SEE SHEETS E100 TO E106 FOR ELECTRICAL DEMOLITION, GATE OPERATOR DEMOLITION AND TICKET DISPENSER DEMOLITION.

2. THE DEMOLITION OF STRUCTURES SHALL INCLUDE THE COMPLETE REMOVAL AND DISPOSAL OF THEIR CONTENTS, FOUNDATIONS. ANY UNFILLED EXCAVATION OR OTHER HAZARD LEFT UNATTENDED DURING PERIODS OF INACTIVITY SHALL BE PROPERLY FENCED OR PROTECTED BY THE CONTRACTOR. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE STRUCTURE DEMOLITION. ALL UTILITIES, ELECTRICAL DUCTS/CABLES SHALL BE REMOVED AND/OR CAPPED TO THE SATISFACTION OF THE ENGINEER AND IN ACCORDANCE WITH ALL STATE PROVISIONS AND LOCAL REGULATIONS. THE REMOVAL OF ANY ITEM(S) OR OBJECT(S) LOCATED WITHIN THE LIMITS SHOWN FOR WHICH A SPECIFIC PAY ITEM IS NOT CONTAINED IN THE BID PROPOSAL SHALL BE INCIDENTAL TO THE ASSOCIATED BUILDING DEMOLITION.

3. ALL REFUSE SHALL BE CLEARED FROM THE PROJECT SITE TO THE SATISFACTION OF THE ENGINEER. THE LOCAL CONTRACTOR SHALL DISPOSE OF REFUSE OFFSITE IN ACCORDANCE WITH ALL STATE AND LOCAL REQUIREMENTS.

4. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN THE NECESSARY LOCAL PERMITS THAT ARE REQUIRED.

5. THE AIRPORT RESERVES THE RIGHT TO REMOVE AND SAVE ANY SALVAGEABLE MATERIALS PRIOR TO THE BUILDING DEMOLITION. THE CONTRACTOR SHALL GIVE A TWO WEEK NOTICE PRIOR TO BEGINNING BUILDING DEMOLITION.

6. PAVEMENT TO BE REMOVED THAT IS ADJACENT TO PAVEMENT TO REMAIN SHALL BE SAWCUT TO STRAIGHT, NEAT, PLUMB LINES PRIOR TO REMOVAL.

7. MATCHLINES ARE THE LIMIT OF WORK FOR CONTRACT QUANTITIES SHOWN ON EACH SHEET.

8. THERE ARE EXISTING UNDERGROUND ELECTRICAL AND COMMUNICATIONS CABLES IN THE PROJECT WORK AREAS. THE ENGINEER HAS MADE EVERY EFFORT TO SHOW THEIR APPROXIMATE LOCATIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE EVERY CABLE LOCATED, FLAGGED AND IDENTIFIED PRIOR TO CONSTRUCTION. ANY DAMAGE DONE TO FLAGGED OR OTHERWISE LOCATED CABLES SHALL BE REPLACED AT THE CONTRACTORS EXPENSE. LOCATION OF EXISTING UTILITIES MAY BE DONE BY CALLING GOPHER STATE ONE CALL 1-800-252-1166 TO NOTIFY LOCAL UTILITIES. THIS IS REQUIRED BY LAW.

9. ALL EXISTING AIRPORT SIGNAGE ON ANY FENCING DEMOLITION WILL BE SALVAGED AND TURNED OVER TO THE OWNER.

10. ALL DEMOLITION IS TO BE PHASED TO MAINTAIN TRAFFIC FLOW TO AND FROM THE EXISTING TERMINAL BUILDING. SEE SHEETS CXXX-CXXX

11. DEMOLITION OF THE EXISTING BUILDING SHALL NOT BE COMMENCED UNTIL WRITTEN DIRECTION FROM THE ENGINEER IS PROVIDED.

12. DEMOLITION OF FUEL TANK MUST BE COMPLETED BY A LICENSED/CERTIFIED TANK DEMOLITION COMPANY.

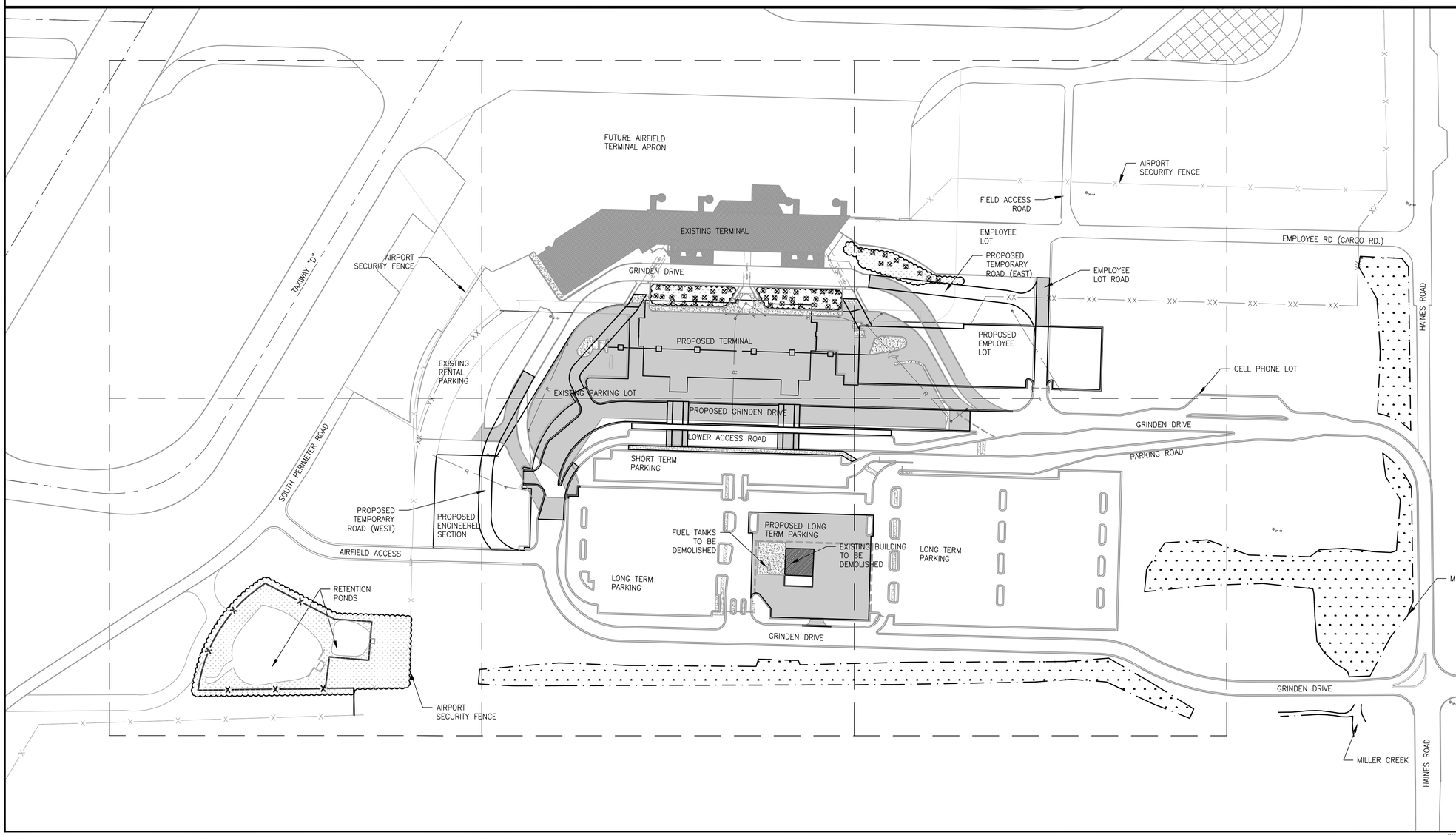
DEMOLITION LEGEND

- EXISTING FENCE TO REMAIN
- REMOVE EXISTING AIRFIELD SECURITY FENCE
- TEMPORARY SECURITY FENCE
- REMOVE EXISTING STORM SEWER
- SHEET MATCHLINE
- CLEAR ISOLATED TREE
- CLEARING AND GRUBBING
- EXISTING TREES TO REMAIN
- EXISTING BITUMINOUS PAVEMENT REMOVAL
- EXISTING CONCRETE PAVEMENT REMOVAL
- EXISTING CURB REMOVAL
- DEMOLISH EXISTING BUILDING OR SALVAGE
- SAWCUT BITUMINOUS PAVEMENT (FULL DEPTH)

NOTE:
PROPOSED FEATURES SHOWN FOR REFERENCE ONLY.

NORTH

0 100' 200'



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Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
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SHEET TITLE

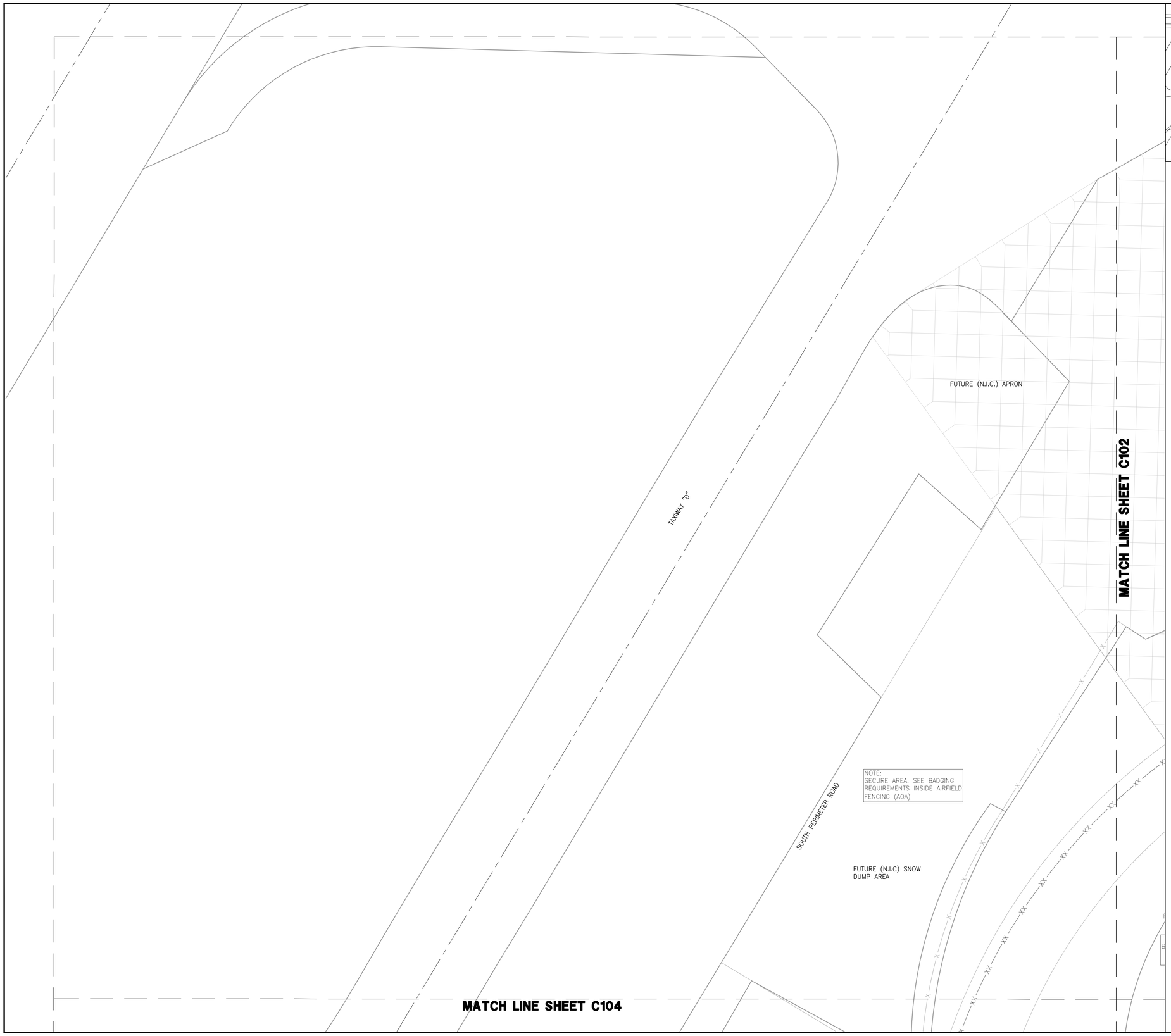
DEMOLITION, CLEARING AND GRUBBING OVERALL PLAN AND NOTES

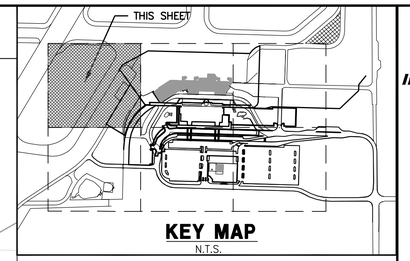
SHEET NUMBER

C100

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C100.dwg Plotted on: 4/17/2010 3:58 PM Plotted by: Dixon, Lukas





KEY MAP
N.T.S.

NORTH

0 30' 60'

DEMOLITION LEGEND

- EXISTING FENCE TO REMAIN
- REMOVE EXISTING AIRFIELD SECURITY FENCE
- TEMPORARY SECURITY FENCE
- REMOVE EXISTING STORM SEWER
- SHEET MATCHLINE
- CLEAR ISOLATED TREE
- CLEARING AND GRUBBING
- EXISTING TREES TO REMAIN
- EXISTING BITUMINOUS PAVEMENT REMOVAL
- EXISTING CONCRETE PAVEMENT REMOVAL
- EXISTING CURB REMOVAL
- DEMOLISH EXISTING BUILDING OR SALVAGE
- SAWCUT BITUMINOUS PAVEMENT (FULL DEPTH)

NOTE:
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NOTE:
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MINNESOTA STATE PLANE NORTH (1996)
VERTICAL DATUM IS NAVD 88
HORIZONTAL DATUM IS NAD83

SEE SHEET C006 FOR A LIST OF HORIZONTAL AND VERTICAL CONTROL POINTS

AIRFIELD NOTE:

TOFA: (TAXIWAY OBJECT FREE AREA) IS PART OF THE AIRPORT OPERATIONS AREA THAT REQUIRES PERSONNEL AND VEHICLES ENTERING THE AREA TO BE IN CONTACT WITH THE FAA TOWER. THE CONTRACTOR SHALL NOT ENTER THIS AREA.

TSA: (TAXIWAY SAFETY AREA) IS ALSO PART OF THE AIRPORT OPERATIONS AREA THAT REQUIRES PERSONNEL AND VEHICLES ENTERING THE AREA TO BE IN CONTACT WITH THE FAA TOWER. THE CONTRACTOR SHALL NOT ENTER THIS AREA.

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DESIGNED BY: JEH

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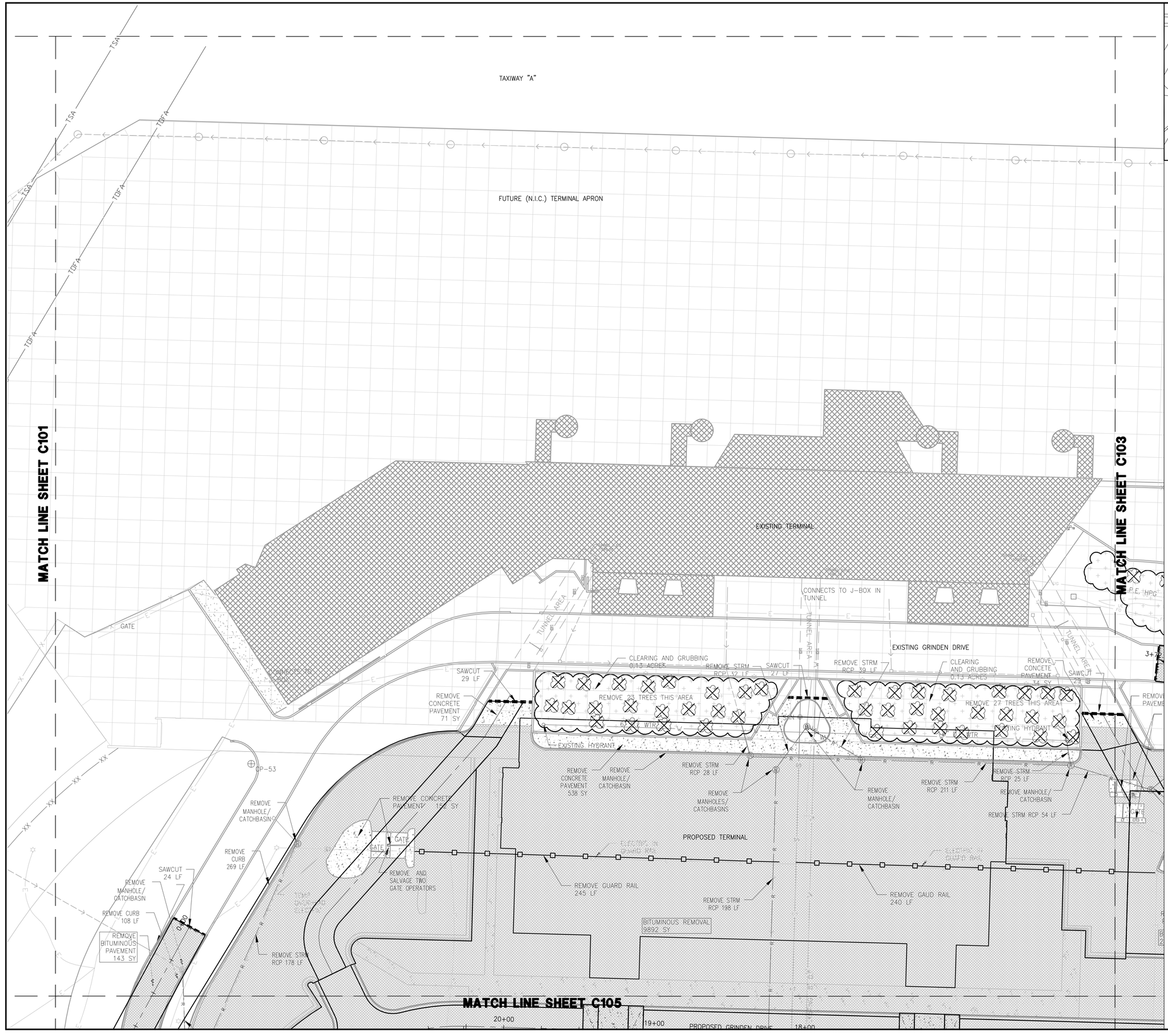
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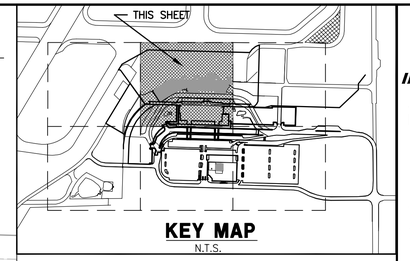
SHEET TITLE
DEMOLITION, CLEARING AND GRUBBING PLAN (SHEET 1 OF 6)

SHEET NUMBER
C101

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C101.dwg Plotted on: 4/6/2010 9:21 AM Plotted by: Erdmann, Ryan
I:\P\2131882.099 Dlh Terminal Design Phase 2\CAD\C\Dwg\C104-C105.dwg, 4/6/2010 9:21:14 AM





KEY MAP
N.T.S.

NORTH

0 30' 60'

DEMOLITION LEGEND

- EXISTING FENCE TO REMAIN
- REMOVE EXISTING AIRFIELD SECURITY FENCE
- TEMPORARY SECURITY FENCE
- REMOVE EXISTING STORM SEWER
- SHEET MATCHLINE
- CLEAR ISOLATED TREE
- CLEARING AND GRUBBING
- EXISTING TREES TO REMAIN
- EXISTING BITUMINOUS PAVEMENT REMOVAL
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VERTICAL DATUM IS NAVD 88
HORIZONTAL DATUM IS NAD83

SEE SHEET C006 FOR A LIST OF HORIZONTAL AND VERTICAL CONTROL POINTS

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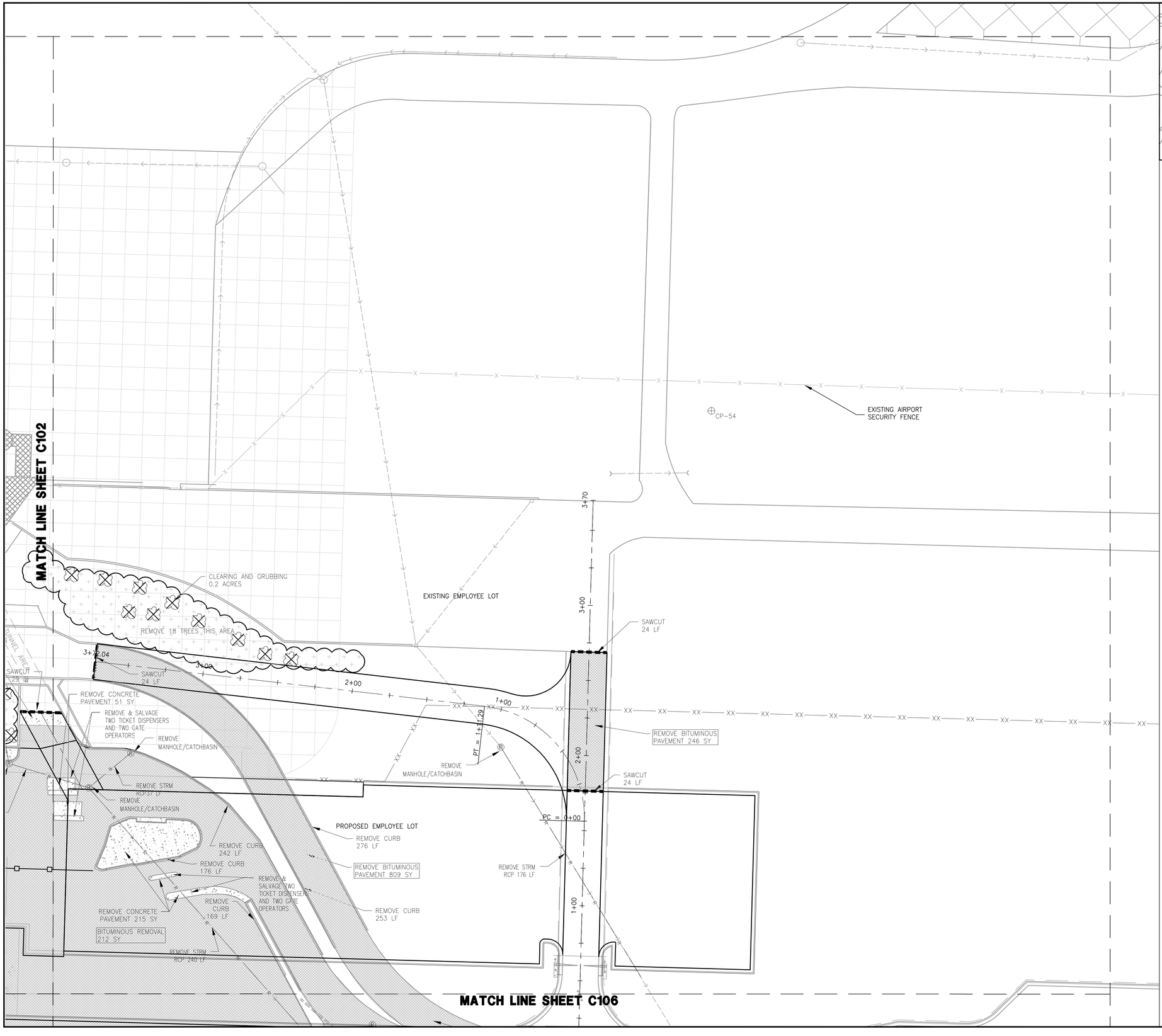
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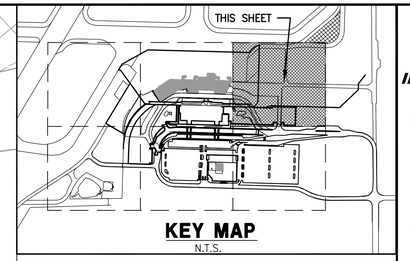
SHEET TITLE
DEMOLITION CLEARING AND GRUBBING PLAN (SHEET 2 OF 6)

SHEET NUMBER
C102

90% NOT FOR CONSTRUCTION

T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C102.dwg Plotted on: 4/6/2010 9:22 AM Plotted by: Erdmann, Ryan





KEY MAP
N.T.S.

NORTH

0 30′ 60′

DEMOLITION LEGEND

- EXISTING FENCE TO REMAIN
- REMOVE EXISTING AIRFIELD SECURITY FENCE
- TEMPORARY SECURITY FENCE
- REMOVE EXISTING STORM SEWER
- SHEET MATCHLINE
- CLEAR ISOLATED TREE
- CLEARING AND GRUBBING
- EXISTING TREES TO REMAIN
- EXISTING BITUMINOUS PAVEMENT REMOVAL
- EXISTING CONCRETE PAVEMENT REMOVAL
- EXISTING CURB REMOVAL
- DEMOLISH EXISTING BUILDING OR SALVAGE
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2. QUANTITIES SHOWN WITHIN THE MATCH LINES ON THIS SHEET ARE ONLY FOR THIS SHEET.

NOTE:
ALL NORTHINGS, EASTINGS AND ELEVATIONS LABELED ON THESE PLANS ARE IN:
MINNESOTA STATE PLANE NORTH (1996)
VERTICAL DATUM IS NAVD 88
HORIZONTAL DATUM IS NAD83

SEE SHEET C006 FOR A LIST OF HORIZONTAL AND VERTICAL CONTROL POINTS

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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW TERMINAL DESIGN

CONSULTANTS

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SJA ARCHITECTS
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Landscaping Consultants:
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2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: JOHN E. HIPPCHEN

Signature:

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

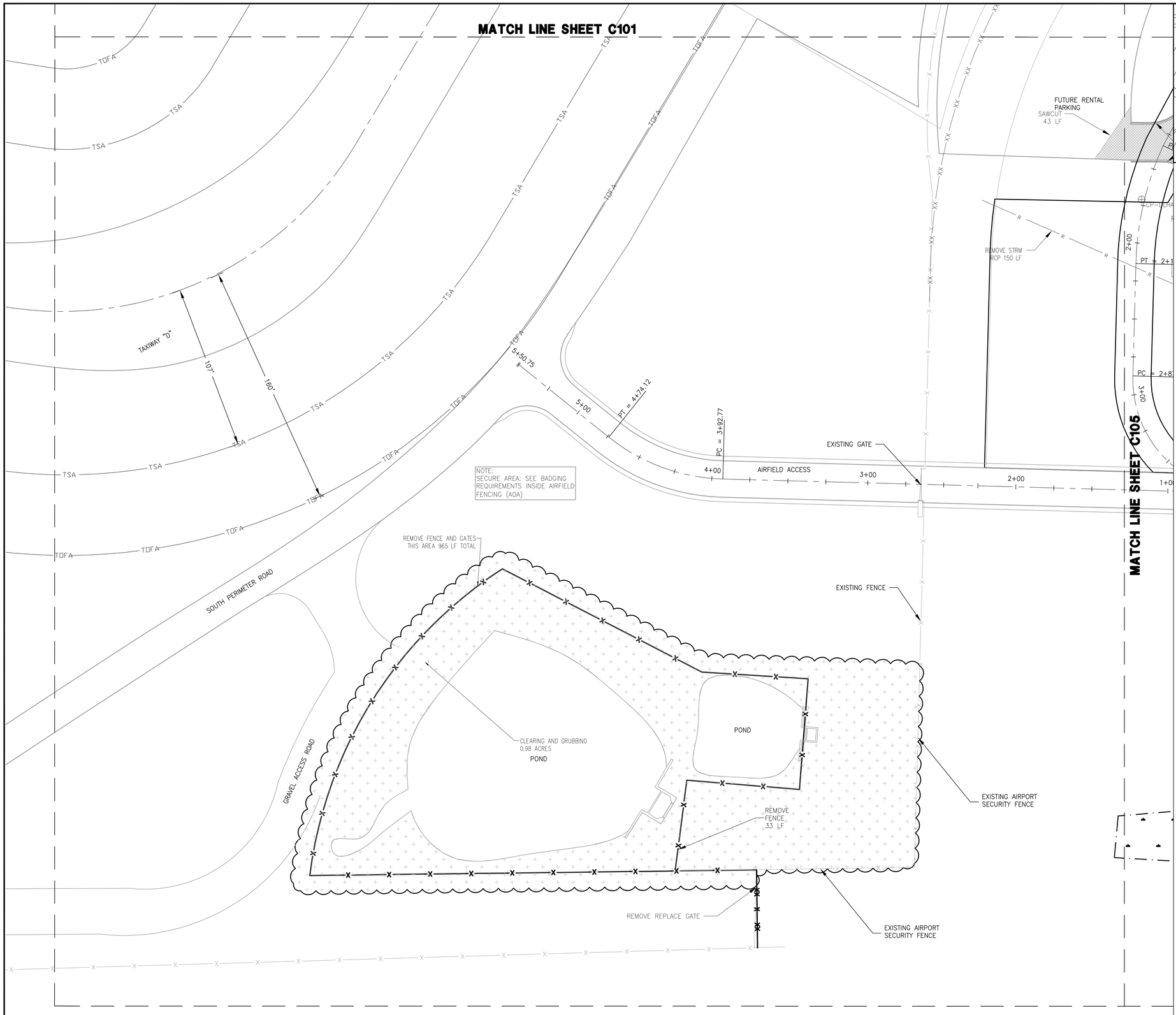
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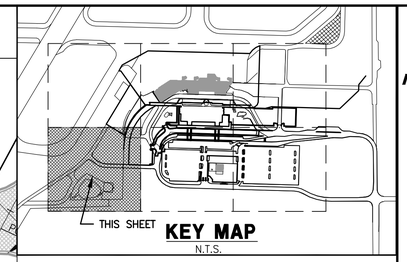
SHEET TITLE
DEMOLITION, CLEARING AND GRUBBING PLAN (SHEET 3 OF 6)

SHEET NUMBER
C103

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2133882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C103.dwg Plotted on: 4/6/2010 9:23 AM Plotted by: Erdmann, Ryan
T:\P\2133882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C103.dwg, 4/6/2010 9:23:48 AM





NORTH

0 30' 60'

DEMOLITION LEGEND

- EXISTING FENCE TO REMAIN
- REMOVE EXISTING AIRFIELD SECURITY FENCE
- TEMPORARY SECURITY FENCE
- REMOVE EXISTING STORM SEWER
- SHEET MATCHLINE
- CLEAR ISOLATED TREE
- CLEARING AND GRUBBING
- EXISTING TREES TO REMAIN
- EXISTING BITUMINOUS PAVEMENT REMOVAL
- EXISTING CONCRETE PAVEMENT REMOVAL
- EXISTING CURB REMOVAL
- DEMOLISH EXISTING BUILDING OR SALVAGE
- SAWCUT BITUMINOUS PAVEMENT (FULL DEPTH)

NOTE:
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2. QUANTITIES SHOWN WITHIN THE MATCH LINES ON THIS SHEET ARE ONLY FOR THIS SHEET.

NOTE:
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MINNESOTA STATE PLANE NORTH (1996)
VERTICAL DATUM IS NAVD 88
HORIZONTAL DATUM IS NAD83

SEE SHEET C006 FOR A LIST OF HORIZONTAL AND VERTICAL CONTROL POINTS

AIRFIELD NOTE:

TOFA: (TAXIWAY OBJECT FREE AREA) IS PART OF THE AIRPORT OPERATIONS AREA THAT REQUIRES PERSONNEL AND VEHICLES ENTERING THE AREA TO BE IN CONTACT WITH THE FAA TOWER. THE CONTRACTOR SHALL NOT ENTER THIS AREA.

TSA: (TAXIWAY SAFETY AREA) IS ALSO PART OF THE AIRPORT OPERATIONS AREA THAT REQUIRES PERSONNEL AND VEHICLES ENTERING THE AREA TO BE IN CONTACT WITH THE FAA TOWER. THE CONTRACTOR SHALL NOT ENTER THIS AREA.

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Print Name: JOHN E. HIPPCHEN

Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

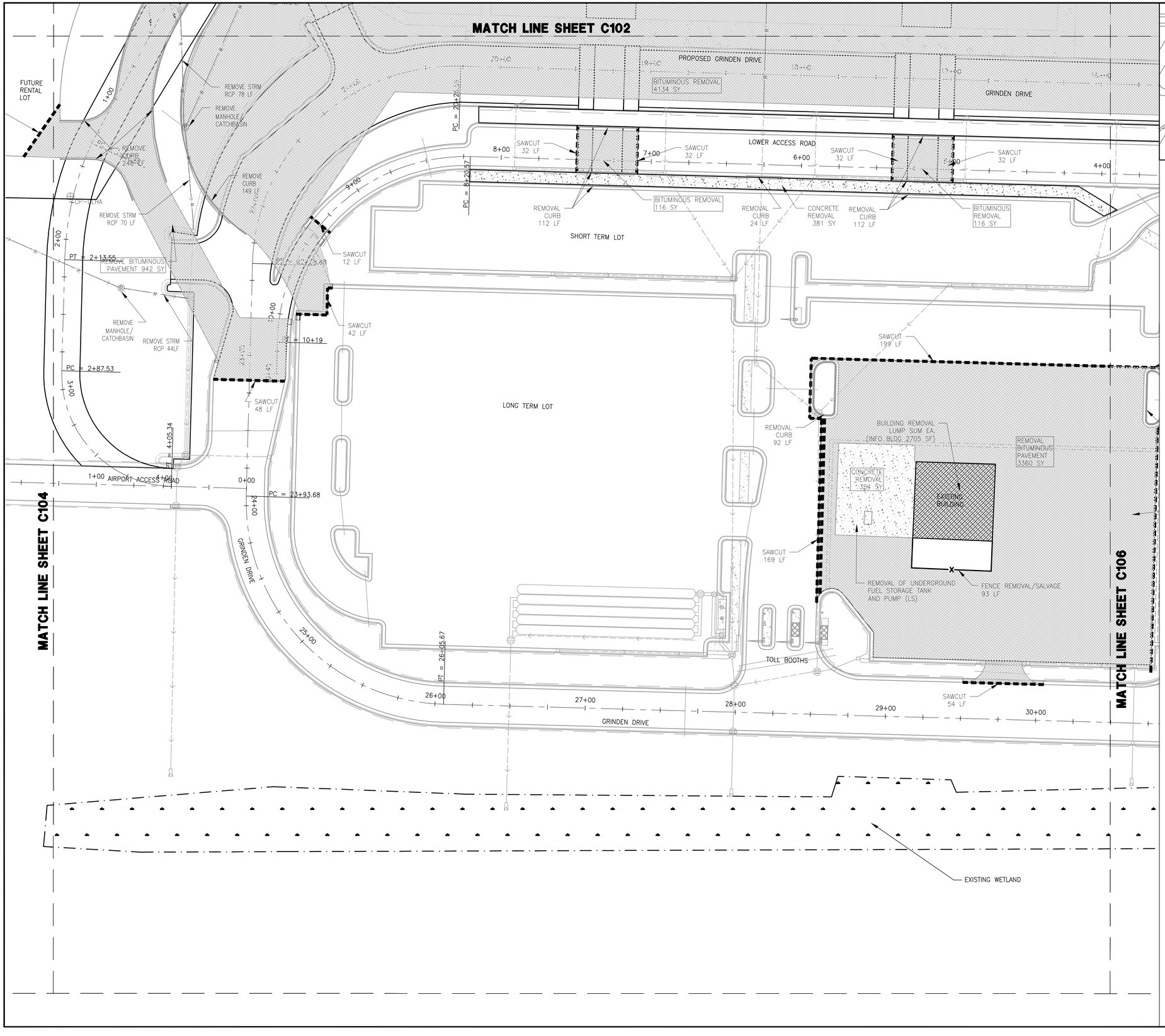
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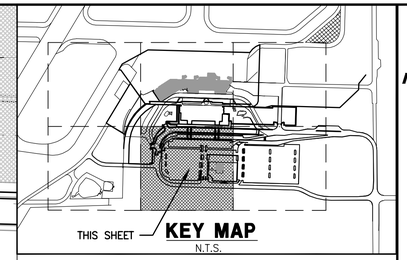
SHEET TITLE
DEMOLITION, CLEARING AND GRUBBING PLAN (SHEET 4 OF 6)

SHEET NUMBER
C104

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C104.dwg Plotted on: 4/6/2010 9:25 AM Plotted by: Erdmann, Ryan
T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C104.dwg, 4/6/2010 9:25:05 AM





NORTH

0 30' 60'

DEMOLITION LEGEND

- EXISTING FENCE TO REMAIN
- REMOVE EXISTING AIRFIELD SECURITY FENCE
- TEMPORARY SECURITY FENCE
- REMOVE EXISTING STORM SEWER
- SHEET MATCHLINE
- CLEAR ISOLATED TREE
- CLEARING AND GRUBBING
- EXISTING TREES TO REMAIN
- EXISTING BITUMINOUS PAVEMENT REMOVAL
- EXISTING CONCRETE PAVEMENT REMOVAL
- EXISTING CURB REMOVAL
- DEMOLISH EXISTING BUILDING OR SALVAGE
- SAWCUT BITUMINOUS PAVEMENT (FULL DEPTH)

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VERTICAL DATUM IS NAVD 88
HORIZONTAL DATUM IS NAD83

SEE SHEET C006 FOR A LIST OF HORIZONTAL AND VERTICAL CONTROL POINTS

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Signature: John E Hippchen

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REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
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DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

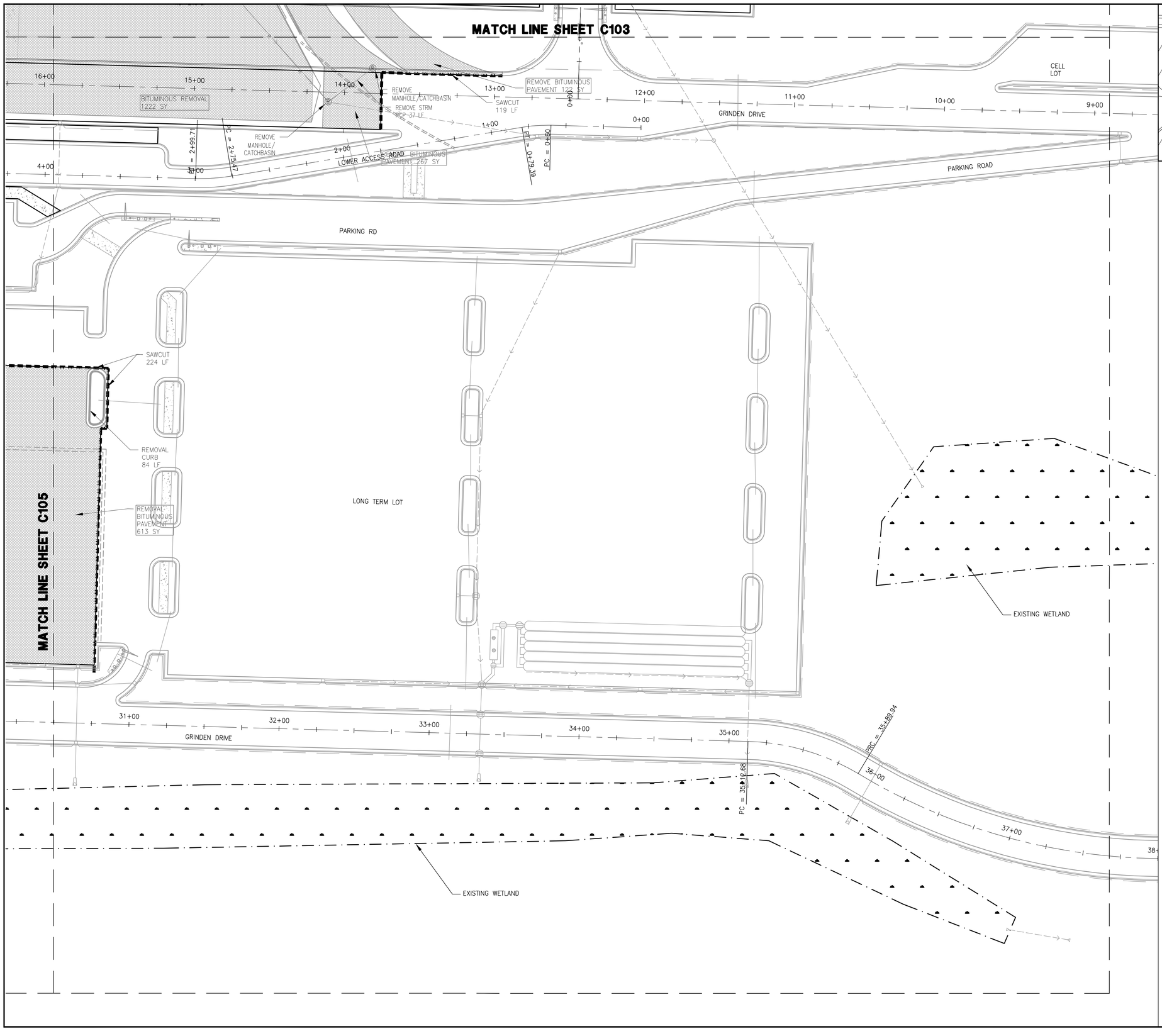
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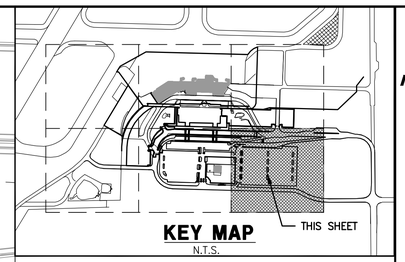
SHEET TITLE
DEMOLITION, CLEARING AND GRUBBING PLAN (SHEET 5 OF 6)

SHEET NUMBER
C105

90% NOT FOR CONSTRUCTION

T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C105.dwg Plotted on: 4/6/2010 9:26 AM Plotted by: Erdmann, Ryan





KEY MAP
N.T.S.

NORTH

0 30′ 60′

DEMOLITION LEGEND

- EXISTING FENCE TO REMAIN
- REMOVE EXISTING AIRFIELD SECURITY FENCE
- TEMPORARY SECURITY FENCE
- REMOVE EXISTING STORM SEWER
- SHEET MATCHLINE
- CLEAR ISOLATED TREE
- CLEARING AND GRUBBING
- EXISTING TREES TO REMAIN
- EXISTING BITUMINOUS PAVEMENT REMOVAL
- EXISTING CONCRETE PAVEMENT REMOVAL
- EXISTING CURB REMOVAL
- DEMOLISH EXISTING BUILDING OR SALVAGE
- SAWCUT BITUMINOUS PAVEMENT (FULL DEPTH)

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DATE ISSUED: 03-29-2010
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AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
DEMOLITION, CLEARING AND GRUBBING PLAN (SHEET 6 OF 6)

SHEET NUMBER
C106

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T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C106.dwg, 4/5/2010 8:27:59 AM



RENTAL CAR BUILDING, FUEL TANK, AND PUMP TO BE DEMOLISHED (SOUTHWEST)



RENTAL CAR BUILDING TO BE DEMOLISHED (NORTHEAST)



PARKING LOT ENTRANCE TICKET DISPENSERS TO BE SALVAGED



GATES BETWEEN EXISTING SHORT TERM AND LONG TERM PARKING LOTS TO BE SALVAGED



FLAG POLE SOUTH OF PASSENGER TUNNEL TO BE SALVAGED

NOTE: ALL DEMOLITION AND RELOCATING SHALL BE DONE IN COORDINATION WITH THE PHASING OF TRAFFIC TO ACCOMMODATE TRAFFIC TO AND FROM THE EXISTING TERMINAL BUILDING.

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REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010

REVIEWED BY: -

DRAWN BY: LAD

DESIGNED BY: JEH

AEP PROJECT NUMBER

213-1882-091

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SHEET TITLE

DEMOLITION DETAILS AND PHOTOS

SHEET NUMBER

C107

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C107.dwg Plotted on: 4/6/2010 9:28 AM Plotted by: Erdmann, Ryan

XP:2131882.099 DLH Terminal Design Phase 2\CAD\Xref\Arch\C107.dwg, 4/6/2010 9:28:44 AM

HORIZONTAL CURVE DATA TABLE

CURVE NUMBER	CENTER	PC	PT	RADIUS	DELTA	LENGTH	ALIGNMENT NAME
1	N:452565.5641 E:2854733.0263	N:452690.5133 E:2854736.4564	N:452566.9034 E:2854608.0372	125.0'	90° 57' 31"	198.43'	LOWER ACCESS ROAD
2	N:452615.7601 E:2854726.3861	N:452750.7099 E:2854730.0682	N:452619.3704 E:2854591.4344	135.0'	90° 01' 50"	212.13'	GRINDEN DRIVE

TEMPORARY ROAD CONNECTIONS HORIZONTAL CURVE DATA TABLE

CURVE NUMBER	CENTER	PC	PT	RADIUS	DELTA	LENGTH	ALIGNMENT NAME
3	N:452809.8071 E:2854658.9252	N:452798.8977 E:2854636.4311	N:452826.4335 E:2854640.2554	25.0'	67° 33' 34"	29.48'	TEMPORARY ROAD CONNECTION WEST 2
4	N:452887.6141 E:2855441.2810	N:452885.5685 E:2855516.2531	N:452961.8577 E:2855449.7973	75.0'	85° 01' 11"	111.29'	TEMPORARY ROAD CONNECTION EAST
5	N:452616.5135 E:2854666.3871	N:452699.3657 E:2854484.3554	N:452621.8694 E:2854466.4588	200.0'	22° 56' 18"	80.07'	TEMPORARY ROAD CONNECTION WEST 2
6	N:452545.9121 E:2854539.4509	N:452547.9206 E:2854464.4778	N:452470.9358 E:2854537.4455	75.0'	90° 00' 09"	117.81'	TEMPORARY ROAD CONNECTION WEST 2

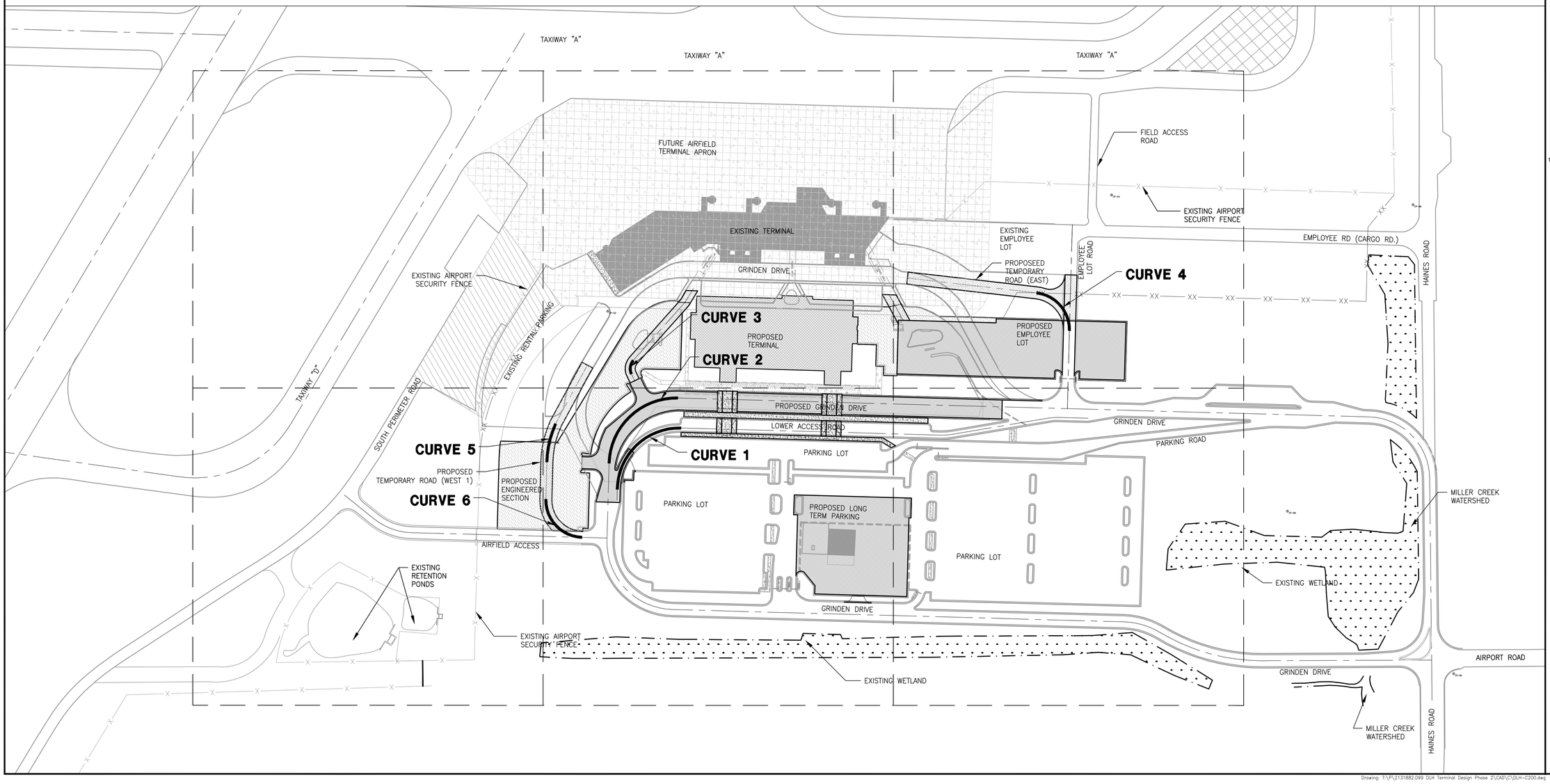
NOTES:
1. THE TEMPORARY ROAD CONNECTIONS SHALL BE PLACED FOR EXISTING TERMINAL TRAFFIC AND SHALL BE PHASED. SEE SHEETS COXX–CXXX FOR TRAFFIC CONTROL AND PHASING.

NOTE:
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VERTICAL DATUM IS NAVD 88
HORIZONTAL DATUM IS NAD83

* SEE SHEET C006 FOR CONTROL POINT INFORMATION

NORTH

0 100' 200'



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DATE ISSUED: 03-29-2010
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DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
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SHEET TITLE

HORIZONTAL GEOMETRY DATA

SHEET NUMBER
C200

90% NOT FOR CONSTRUCTION

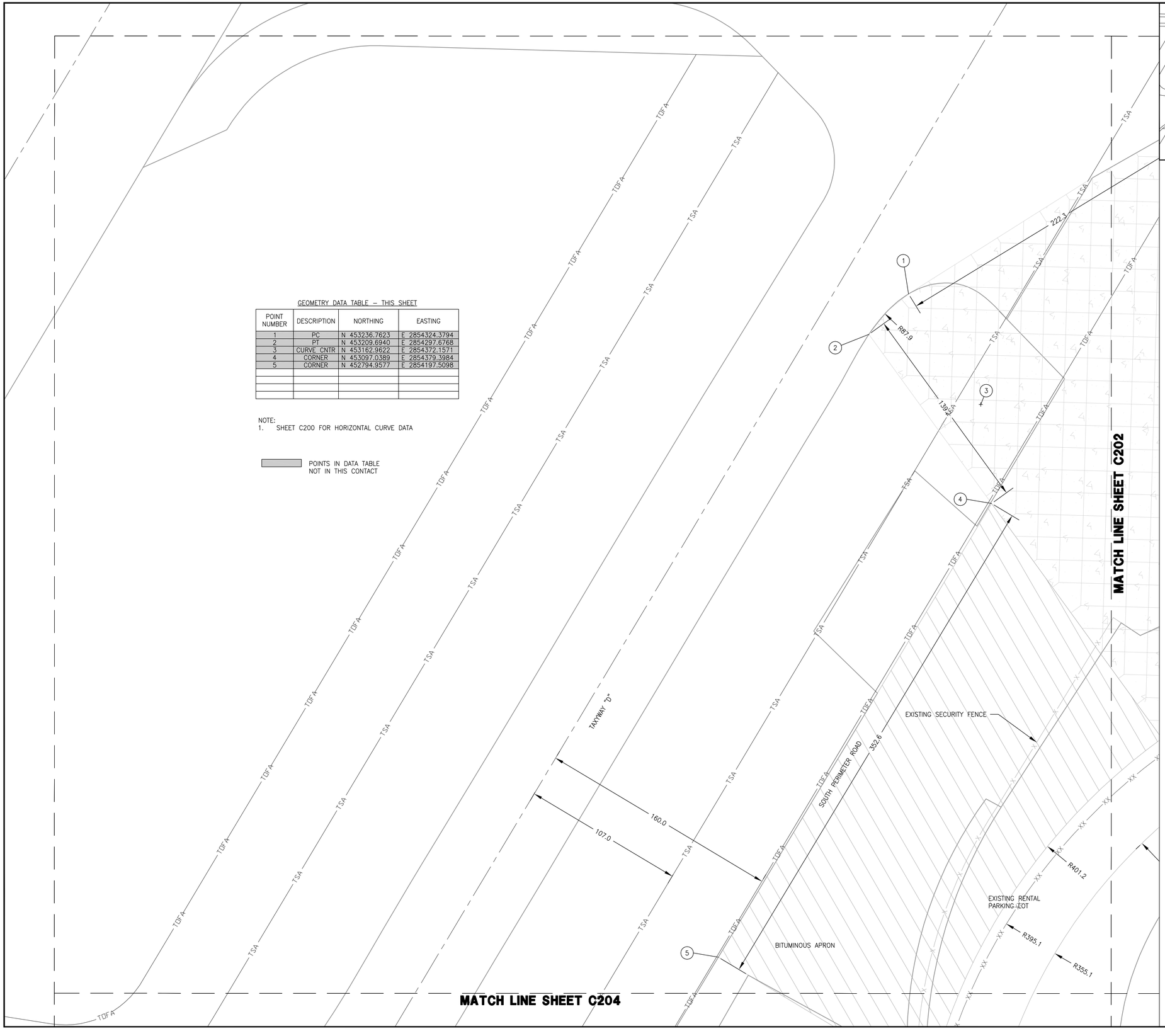
Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C200.dwg Plotted on: 4/1/2010 2:30 PM Plotted by: Dixon, Lukas

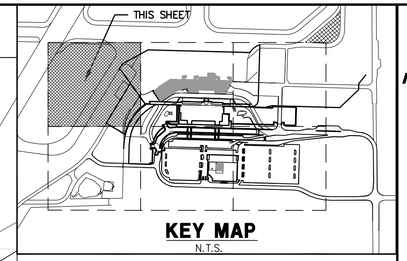
GEOMETRY DATA TABLE – THIS SHEET

POINT NUMBER	DESCRIPTION	NORTHING	EASTING
1	PC	N 453236.7623	E 2854324.3794
2	PT	N 453209.6940	E 2854297.6768
3	CURVE CNTR	N 453162.9622	E 2854372.1571
4	CORNER	N 453097.0389	E 2854379.3984
5	CORNER	N 452794.9577	E 2854197.5098

NOTE:
1. SHEET C200 FOR HORIZONTAL CURVE DATA

POINTS IN DATA TABLE NOT IN THIS CONTACT





KEY MAP
N.T.S.

NORTH

0 30' 60'

GEOMETRY NOTES

1. CONSTRUCTION SURVEY AND STAKEOUT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. NORTHINGS AND EASTINGS GIVEN IN PROJECT ARE IN MINNESOTA STATE PLANE NORTH COORDINATES, SEE SHEET C006 FOR CONTROL POINTS.
3. GRINDEN DRIVE, LOWER ACCESS ROAD, AND TEMPORY ROAD ALIGNMENTS DEFINED BY CENTERLINE GEOMETRIC COORDINATES AND RADII. OTHER ROADWAYS, PARKING LOTS, AND MISCELLANEOUS FEATURES DEFINED BY GEOMETRIC COORDINATES AT EDGE OF PAVEMENT. HORIZONTAL CURVE DATA ON SHEET C200.
4. SEE TYPICAL PAVEMENT SECTION AND DETAILS SHEETS C207–C210. PAVING IN THIS CONTRACT CONSISTS OF THE GRINDEN DRIVE, LOWER ACCESS ROAD, AND TEMPORY ROAD, AND PAVING OF THE EMPLOYEE PARKING LOTS.
5. REFER TO SHEET C200 FOR HORIZONTAL CONTROL DATA.
6. ALL CURB AND GUTTERS ARE CALL OUT BY TYPE THAT SHALL BE PLACED. (SEE CURB AND GITTER)
7. PROVIDE HANDICAP ACCESS RAMPS IN LOCATIONS CALL FOR

CURB AND GUTTER

CURB AND GUTTER CATCH = B624 (STANDARD)
CURB AND GUTTER SPILL = B624–S
MOUNTABLE CURB AND GUTTER = D424
HANDICAP ACCESS RAMP AREA = HARA

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TEL: (218) 591-5079

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: JOHN E. HIPPCHEN

Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: -
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

GEOMETRY PLAN (SHEET 1 OF 6)

SHEET NUMBER
C201

90% NOT FOR CONSTRUCTION

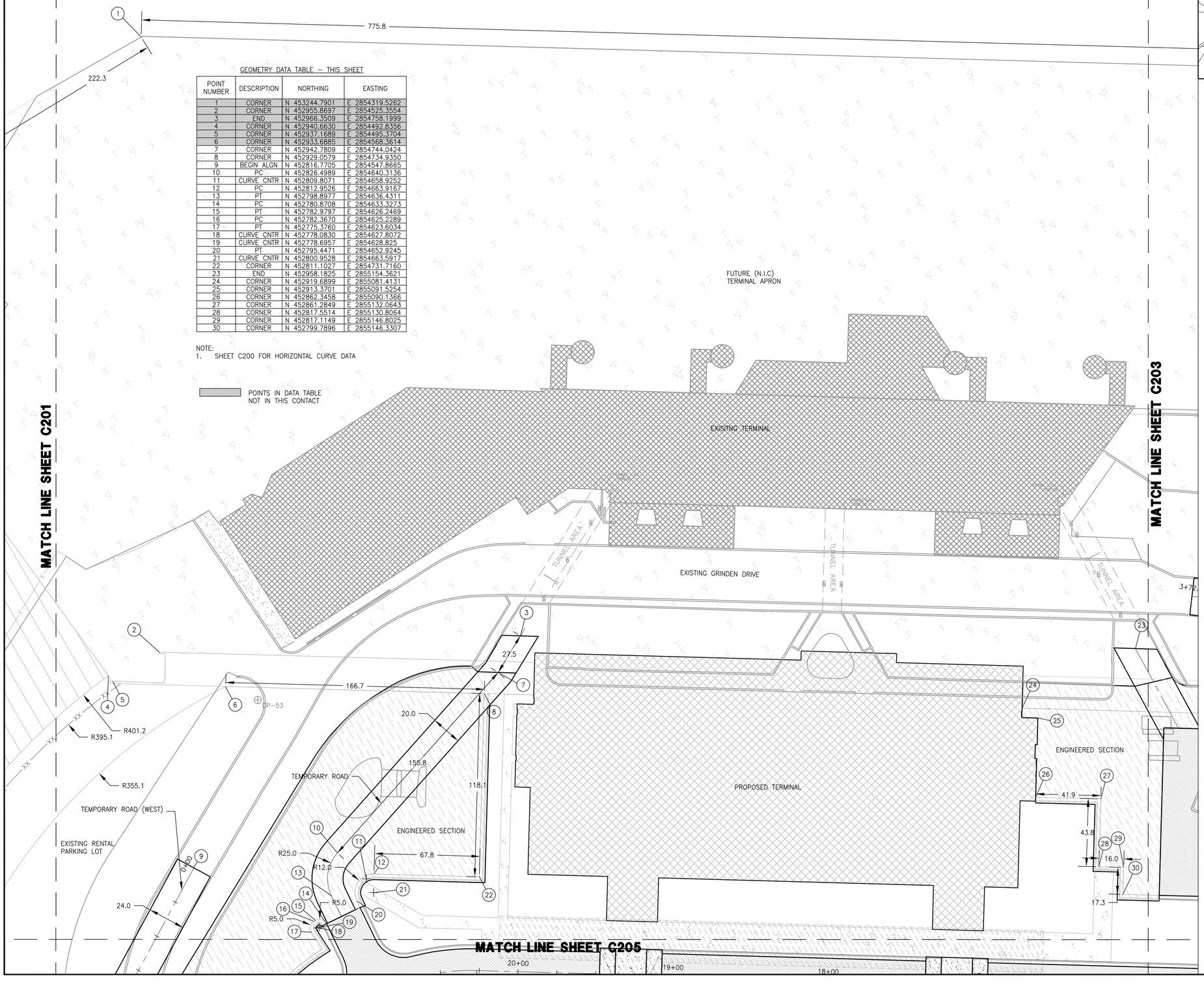
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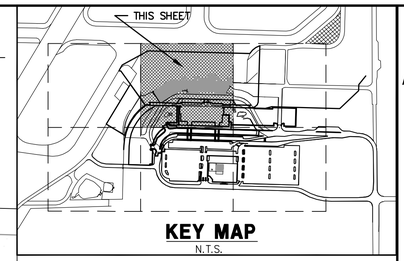
GEOMETRY DATA TABLE – THIS SHEET

POINT NUMBER	DESCRIPTION	NORTHING	EASTING
1	CORNER	N 453244.7901	E 2854319.5262
2	CORNER	N 452955.8697	E 2854525.3554
3	END	N 452966.3509	E 2854758.1999
4	CORNER	N 452940.6630	E 2854492.8356
5	CORNER	N 452937.1689	E 2854495.3704
6	CORNER	N 452933.6885	E 2854568.3614
7	CORNER	N 452942.7809	E 2854744.0424
8	CORNER	N 452929.0579	E 2854734.9350
9	BEGIN ALGN	N 452816.7705	E 2854547.8665
10	PC	N 452826.4989	E 2854640.3136
11	CURVE CNTR	N 452809.8071	E 2854658.9252
12	PC	N 452812.9526	E 2854663.9167
13	PT	N 452798.8977	E 2854636.4311
14	PC	N 452780.8708	E 2854633.3273
15	PT	N 452782.9797	E 2854626.2469
16	PC	N 452782.3670	E 2854625.2289
17	PT	N 452775.3760	E 2854623.6034
18	CURVE CNTR	N 452778.0830	E 2854627.8072
19	CURVE CNTR	N 452778.6957	E 2854628.825
20	PT	N 452795.4471	E 2854652.9245
21	CURVE CNTR	N 452800.9528	E 2854663.5917
22	CORNER	N 452811.1027	E 2854731.7160
23	END	N 452958.1825	E 2855154.3621
24	CORNER	N 452919.6899	E 2855081.4131
25	CORNER	N 452913.3701	E 2855091.5254
26	CORNER	N 452862.3458	E 2855090.1366
27	CORNER	N 452861.2849	E 2855132.0643
28	CORNER	N 452817.5514	E 2855130.8064
29	CORNER	N 452817.1149	E 2855146.8025
30	CORNER	N 452799.7896	E 2855146.3307

NOTE:
1. SHEET C200 FOR HORIZONTAL CURVE DATA

POINTS IN DATA TABLE NOT IN THIS CONTACT





KEY MAP
N.T.S.

NORTH

0 30' 60'

GEOMETRY NOTES

1. CONSTRUCTION SURVEY AND STAKEOUT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. NORTHINGS AND EASTINGS GIVEN IN PROJECT ARE IN MINNESOTA STATE PLANE NORTH COORDINATES, SEE SHEET C006 FOR CONTROL POINTS.
3. GRINDEN DRIVE, LOWER ACCESS ROAD, AND TEMPORY ROAD ALIGNMENTS DEFINED BY CENTERLINE GEOMETRIC COORDINATES AND RADII. OTHER ROADWAYS, PARKING LOTS, AND MISCELLANEOUS FEATURES DEFINED BY GEOMETRIC COORDINATES AT EDGE OF PAVEMENT. HORIZONTAL CURVE DATA ON SHEET C200.
4. SEE TYPICAL PAVEMENT SECTION AND DETAILS SHEETS C207–C210. PAVING IN THIS CONTRACT CONSISTS OF THE GRINDEN DRIVE, LOWER ACCESS ROAD, AND TEMPORY ROAD, AND PAVING OF THE EMPLOYEE PARKING LOTS.
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CURB AND GUTTER

CURB AND GUTTER CATCH = B624 (STANDARD)
CURB AND GUTTER SPILL = B624–S
MOUNTABLE CURB AND GUTTER = D424
HANDICAP ACCESS RAMP AREA = HARA

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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

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Print Name: JOHN E. HIPPCHEN

Signature:

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: -
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

GEOMETRY PLAN (SHEET 2 OF 6)

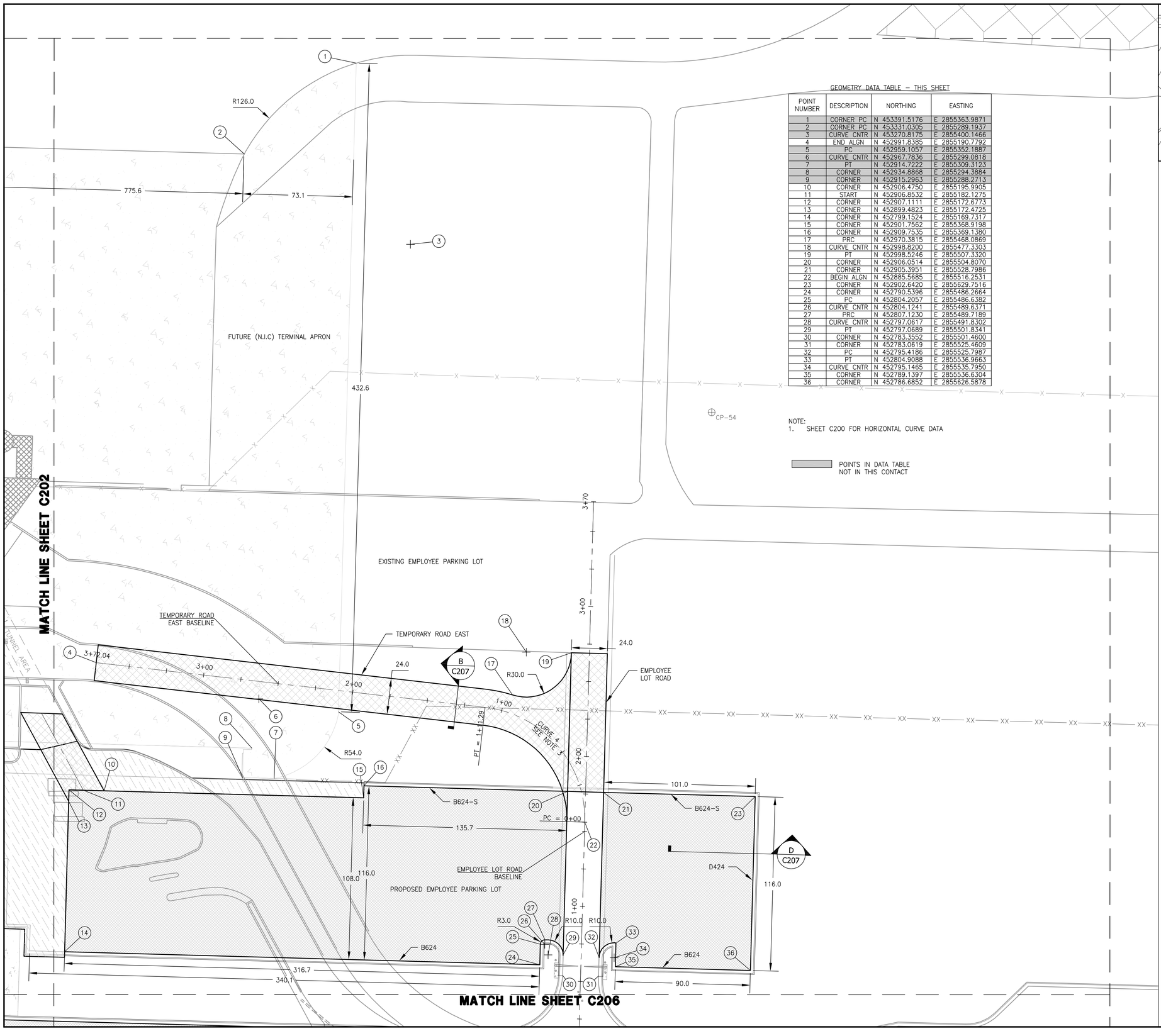
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SHEET NUMBER

C202

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C202.dwg Plotted on: 4/1/2010 2:59 PM Plotted by: Dixon, Lukas

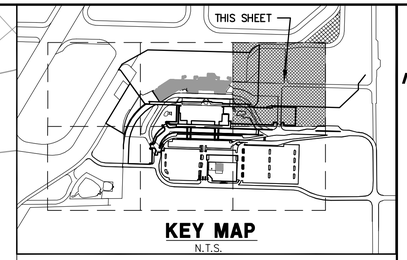


GEOMETRY DATA TABLE – THIS SHEET

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3	CURVE CNTR	N 453270.8175	E 2855400.1466
4	END ALGN	N 452991.8385	E 2855190.7792
5	PC	N 452959.1057	E 2855352.1887
6	CURVE CNTR	N 452967.7836	E 2855299.0818
7	PT	N 452914.7222	E 2855309.3123
8	CORNER	N 452934.8868	E 2855294.3884
9	CORNER	N 452915.2963	E 2855288.2713
10	CORNER	N 452906.4750	E 2855195.9905
11	START	N 452906.8532	E 2855182.1275
12	CORNER	N 452907.1111	E 2855172.6773
13	CORNER	N 452899.4823	E 2855172.4725
14	CORNER	N 452799.1524	E 2855169.7317
15	CORNER	N 452901.7562	E 2855368.9198
16	CORNER	N 452909.7535	E 2855369.1380
17	PRC	N 452970.3815	E 2855468.0869
18	CURVE CNTR	N 452998.8200	E 2855477.3303
19	PT	N 452998.5246	E 2855507.3320
20	CORNER	N 452906.0514	E 2855504.8070
21	CORNER	N 452905.3951	E 2855528.7986
22	BEGIN ALGN	N 452885.5685	E 2855516.2531
23	CORNER	N 452902.6420	E 2855629.7516
24	CORNER	N 452790.5396	E 2855486.2664
25	PC	N 452804.2057	E 2855486.6382
26	CURVE CNTR	N 452804.1241	E 2855489.6371
27	PRC	N 452807.1230	E 2855489.7189
28	CURVE CNTR	N 452797.0617	E 2855491.8302
29	PT	N 452797.0689	E 2855501.8341
30	CORNER	N 452783.3552	E 2855501.4600
31	CORNER	N 452783.0619	E 2855525.4609
32	PC	N 452795.4186	E 2855525.7987
33	PT	N 452804.9088	E 2855536.9663
34	CURVE CNTR	N 452795.1465	E 2855535.7950
35	CORNER	N 452789.1397	E 2855536.6304
36	CORNER	N 452786.6852	E 2855626.5878

NOTE:
1. SHEET C200 FOR HORIZONTAL CURVE DATA

POINTS IN DATA TABLE
NOT IN THIS CONTACT



KEY MAP
N.T.S.

NORTH

0 30' 60'

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Print Name: JOHN E. HIPPCHEN

Signature:

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: -
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
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SHEET TITLE

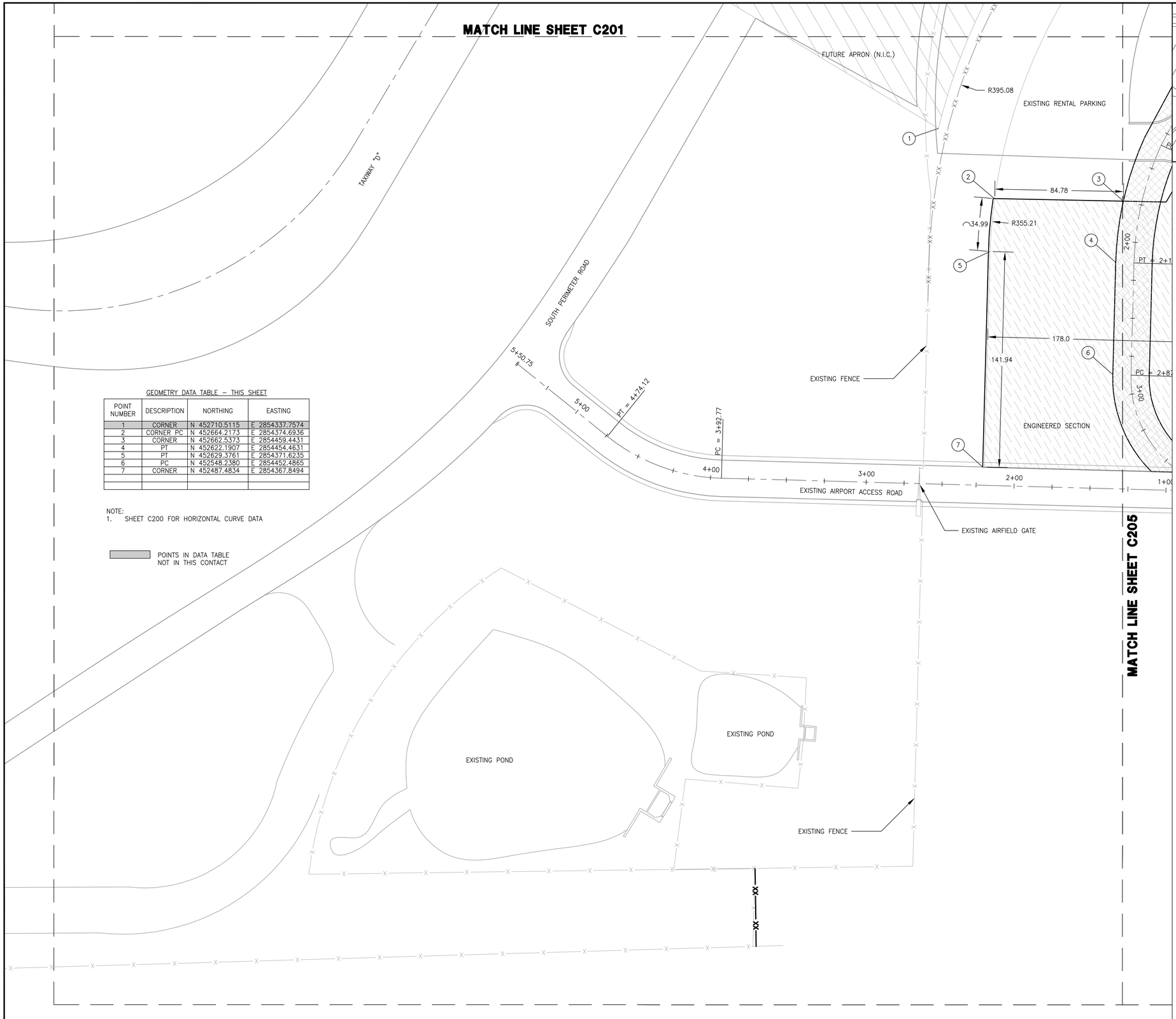
GEOMETRY PLAN (SHEET 3 OF 6)

SHEET NUMBER

C203

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C203.dwg Plotted on: 4/1/2010 3:03 PM Plotted by: Dixon, Lukas

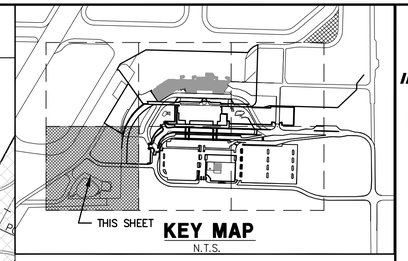


GEOMETRY DATA TABLE – THIS SHEET

POINT NUMBER	DESCRIPTION	NORTHING	EASTING
1	CORNER	N 452710.5115	E 2854337.7574
2	CORNER PC	N 452664.2173	E 2854374.6936
3	CORNER	N 452662.5373	E 2854459.4431
4	PT	N 452622.1907	E 2854454.4631
5	PT	N 452629.3761	E 2854371.6235
6	PC	N 452548.2380	E 2854452.4865
7	CORNER	N 452487.4834	E 2854367.8494

NOTE:
1. SHEET C200 FOR HORIZONTAL CURVE DATA

POINTS IN DATA TABLE NOT IN THIS CONTACT



KEY MAP
N.T.S.

NORTH

0 30' 60'

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NEW TERMINAL DESIGN

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Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

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DATE ISSUED: 03-29-2010
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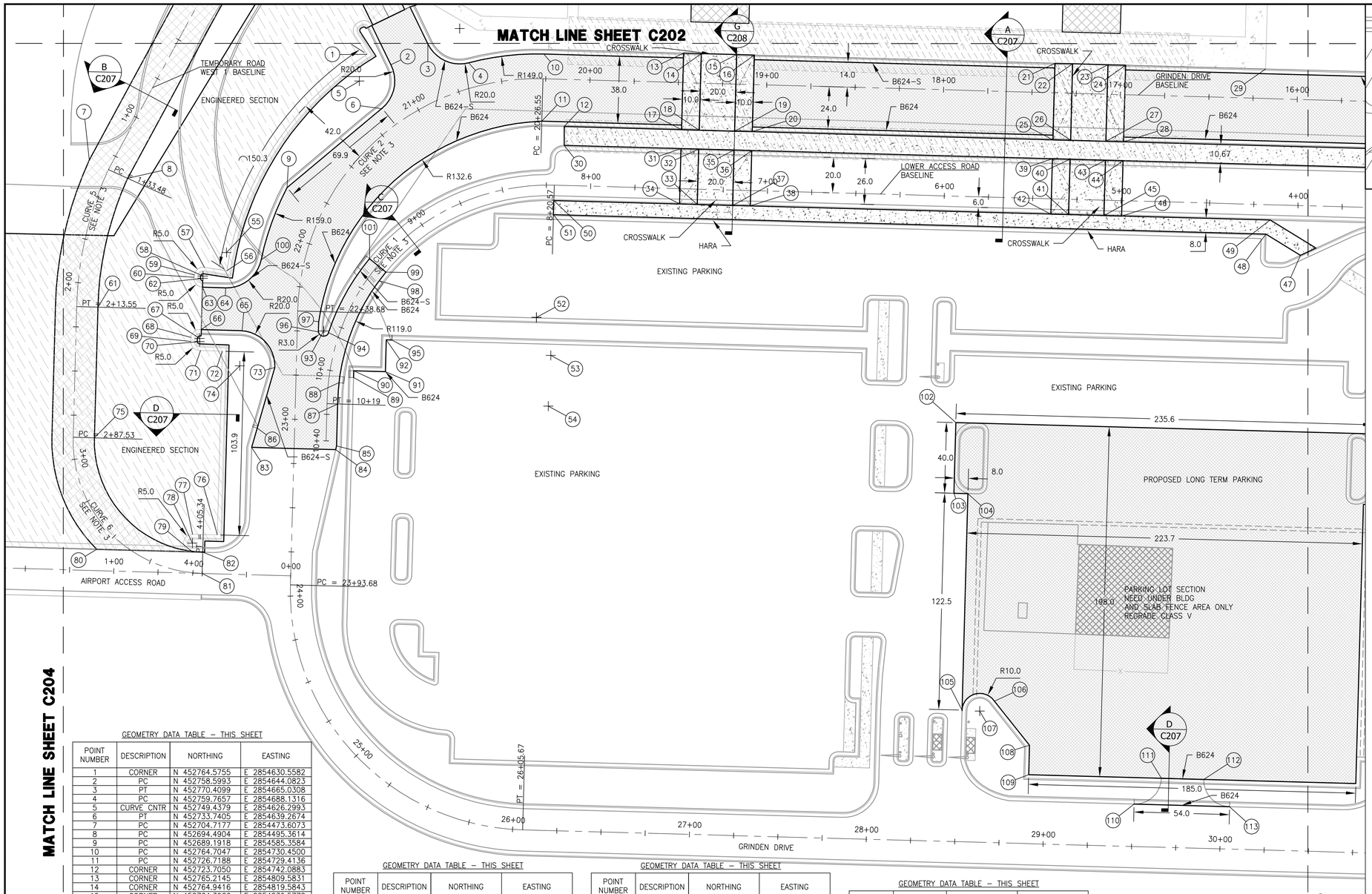
SHEET TITLE

GEOMETRY PLAN (SHEET 4 OF 6)

SHEET NUMBER
C204

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C204.dwg Plotted on: 4/1/2010 3:10 PM Plotted by: Dixon, Lukas



GEOMETRY DATA TABLE – THIS SHEET

POINT NUMBER	DESCRIPTION	NORTHING	EASTING
1	CORNER	N 452764.5755	E 2854630.5582
2	PC	N 452758.5993	E 2854644.0823
3	PT	N 452770.4099	E 2854665.0308
4	PC	N 452759.7657	E 2854688.1316
5	CURVE CNTR	N 452749.4379	E 2854626.2993
6	PT	N 452733.7405	E 2854639.2674
7	PC	N 452704.7177	E 2854473.6073
8	PC	N 452694.4904	E 2854495.3614
9	PC	N 452689.1918	E 2854585.3584
10	PC	N 452764.7047	E 2854730.4500
11	PC	N 452726.7188	E 2854729.4136
12	CORNER	N 452723.7050	E 2854742.0883
13	CORNER	N 452765.2145	E 2854809.5831
14	CORNER	N 452764.9416	E 2854819.5843
15	CORNER	N 452764.3966	E 2854839.5778
16	CORNER	N 452764.1241	E 2854849.5683
17	CORNER	N 452721.8957	E 2854808.4012
18	CORNER	N 452721.6228	E 2854818.4023
19	CORNER	N 452721.0773	E 2854838.3948
20	CORNER	N 452720.8047	E 2854848.3863
21	CORNER	N 452759.4906	E 2855019.5132
22	CORNER	N 452759.2139	E 2855029.5061
23	CORNER	N 452758.6733	E 2855049.5082
24	CORNER	N 452758.4005	E 2855059.4959
25	CORNER	N 452716.1679	E 2855018.3231
26	CORNER	N 452715.8951	E 2855028.3242
27	CORNER	N 452715.3496	E 2855048.3167
28	CORNER	N 452715.0769	E 2855058.3082
29	CORNER	N 452756.2456	E 2855138.5298
30	CORNER	N 452713.0351	E 2854742.0490
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32	CORNER	N 452710.9598	E 2854818.1113
33	CORNER	N 452679.6384	E 2854817.2567
34	CORNER	N 452679.9113	E 2854807.2556
35	CORNER	N 452710.4143	E 2854838.1039
36	CORNER	N 452710.1371	E 2854848.0952
37	CORNER	N 452679.0929	E 2854837.2493
38	CORNER	N 452678.8203	E 2854847.2408
39	CORNER	N 452705.5049	E 2855018.0321
40	CORNER	N 452705.2320	E 2855028.0332
41	CORNER	N 452673.9107	E 2855027.1786
42	CORNER	N 452674.1836	E 2855017.1775
43	CORNER	N 452704.6863	E 2855048.0352
44	CORNER	N 452704.4137	E 2855058.0233
45	CORNER	N 452673.3652	E 2855047.1712

GEOMETRY DATA TABLE – THIS SHEET

POINT NUMBER	DESCRIPTION	NORTHING	EASTING
46	CORNER	N 452673.0925	E 2855057.1656
47	CORNER	N 452650.8885	E 2855158.3107
48	CORNER	N 452662.8387	E 2855138.7250
49	CORNER	N 452670.8014	E 2855141.1360
50	CORNER	N 452681.8495	E 2854736.2200
51	CORNER	N 452673.8566	E 2854735.9991
52	CURVE CNTR	N 452615.7602	E 2854726.3862
53	CURVE CNTR	N 452594.2125	E 2854734.5023
54	CURVE CNTR	N 452565.5497	E 2854733.0553
55	CURVE CNTR	N 452652.4586	E 2854551.1883
56	CORNER	N 452642.1646	E 2854551.3666
57	PC	N 452644.0806	E 2854538.6663
58	CURVE CNTR	N 452639.1366	E 2854537.9204
59	PT	N 452639.7303	E 2854532.9558
60	PC	N 452638.4061	E 2854532.7974
61	PT	N 452621.5480	E 2854478.4545
62	CURVE CNTR	N 452637.8123	E 2854537.7620
63	PT	N 452632.8141	E 2854537.6283
64	PT	N 452632.4657	E 2854550.6535
65	PC	N 452608.1902	E 2854560.0001
66	PC	N 452608.8241	E 2854536.9349
67	CURVE CNTR	N 452603.8472	E 2854536.0028
68	PT	N 452604.4410	E 2854531.0382
69	PC	N 452602.1859	E 2854530.9568
70	CURVE CNTR	N 452602.0529	E 2854535.9551
71	PT	N 452597.0314	E 2854536.5317
72	CORNER	N 452596.6293	E 2854548.8110
73	PT	N 452587.4404	E 2854578.4904
74	CURVE CNTR	N 452588.3750	E 2854558.6513
75	PT	N 452547.5992	E 2854476.4735

GEOMETRY DATA TABLE – THIS SHEET

POINT NUMBER	DESCRIPTION	NORTHING	EASTING
76	CORNER	N 452492.7205	E 2854546.0312
77	PC	N 452493.0949	E 2854532.0363
78	CURVE CNTR	N 452488.0967	E 2854531.9026
79	PT	N 452483.0985	E 2854531.7689
80	CORNER	N 452484.5348	E 2854477.7713
81	END ALGN	N 452470.9389	E 2854537.4456
82	CORNER	N 452482.9234	E 2854537.7802
83	CORNER	N 452542.1668	E 2854565.3604
84	CORNER	N 452540.9420	E 2854612.9259
85	CORNER	N 452543.0234	E 2854613.4005
86	CORNER	N 452553.1228	E 2854568.5322
87	PT	N 452566.7429	E 2854614.0351
88	CORNER	N 452578.7972	E 2854614.7700
89	CORNER	N 452581.6987	E 2854622.9532
90	CORNER	N 452585.5599	E 2854623.0586
91	CORNER	N 452585.0716	E 2854640.9632
92	CORNER	N 452603.0649	E 2854641.4541
93	CURVE CNTR	N 452608.0951	E 2854606.0781
94	PRC	N 452607.1417	E 2854608.8059
95	CORNER	N 452602.9763	E 2854644.7026
96	PC	N 452607.5686	E 2854603.1229
97	PT	N 452613.2745	E 2854603.2756
98	CORNER	N 452636.4393	E 2854637.4466
99	CORNER	N 452641.3105	E 2854641.2537
100	PT	N 452648.3582	E 2854570.7636
101	CORNER	N 452649.0775	E 2854632.0968
102	CORNER	N 452556.2421	E 2854963.4537
103	CORNER	N 452516.2465	E 2854962.3624
104	CORNER	N 452516.0297	E 2854970.3104
105	PC	N 452393.3614	E 2854966.9634

GEOMETRY DATA TABLE – THIS SHEET

POINT NUMBER	DESCRIPTION	NORTHING	EASTING
106	PT	N 452398.6453	E 2854985.2737
107	CURVE CNTR	N 452393.0887	E 2854976.9597
108	CORNER	N 452373.7946	E 2855005.1070
109	CORNER	N 452357.0703	E 2855004.6507
110	CORNER	N 452340.4433	E 2855064.2193
111	CORNER	N 452355.0286	E 2855079.6229
112	CORNER	N 452354.3739	E 2855103.6198
113	CORNER	N 452338.9703	E 2855118.2075

NOTE:
1. SHEET C200 FOR HORIZONTAL CURVE DATA

POINTS IN DATA TABLE NOT IN THIS CONTACT

GEOMETRY NOTES

1. CONSTRUCTION SURVEY AND STAKEOUT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. NORTHINGS AND EASTINGS GIVEN IN PROJECT ARE IN MINNESOTA STATE PLANE NORTH COORDINATES, SEE SHEET C006 FOR CONTROL POINTS.
3. GRINDEN DRIVE, LOWER ACCESS ROAD, AND TEMPORY ROAD ALIGNMENTS DEFINED BY CENTERLINE GEOMETRIC COORDINATES AND RADII. OTHER ROADWAYS, PARKING LOTS, AND MISCELLANEOUS FEATURES DEFINED BY GEOMETRIC COORDINATES AT EDGE OF PAVEMENT. HORIZONTAL CURVE DATA ON SHEET C200.
4. SEE TYPICAL PAVEMENT SECTION AND DETAILS SHEETS C207–C210. PAVING IN THIS CONTRACT CONSISTS OF THE GRINDEN DRIVE, LOWER ACCESS ROAD, AND TEMPORY ROAD, AND PAVING OF THE EMPLOYEE PARKING LOTS.
5. REFER TO SHEET C200 FOR HORIZONTAL CONTROL DATA.
6. ALL CURB AND GUTTERS ARE CALL OUT BY TYPE THAT SHALL BE PLACED. (SEE CURB AND GITTER)
7. PROVIDE HANDICAP ACCESS RAMPS IN LOCATIONS CALL FOR

CURB AND GUTTER

CURB AND GUTTER CATCH = B624 (STANDARD)
CURB AND GUTTER SPILL = B624–S
MOUNTABLE CURB AND GUTTER = D424
HANDICAP ACCESS RAMP AREA = HARA

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NEW TERMINAL DESIGN

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Structural Engineers:
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Landscaping Consultants:
APPOLD DESIGN
2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: JOHN E. HIPPCHEN

Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: -
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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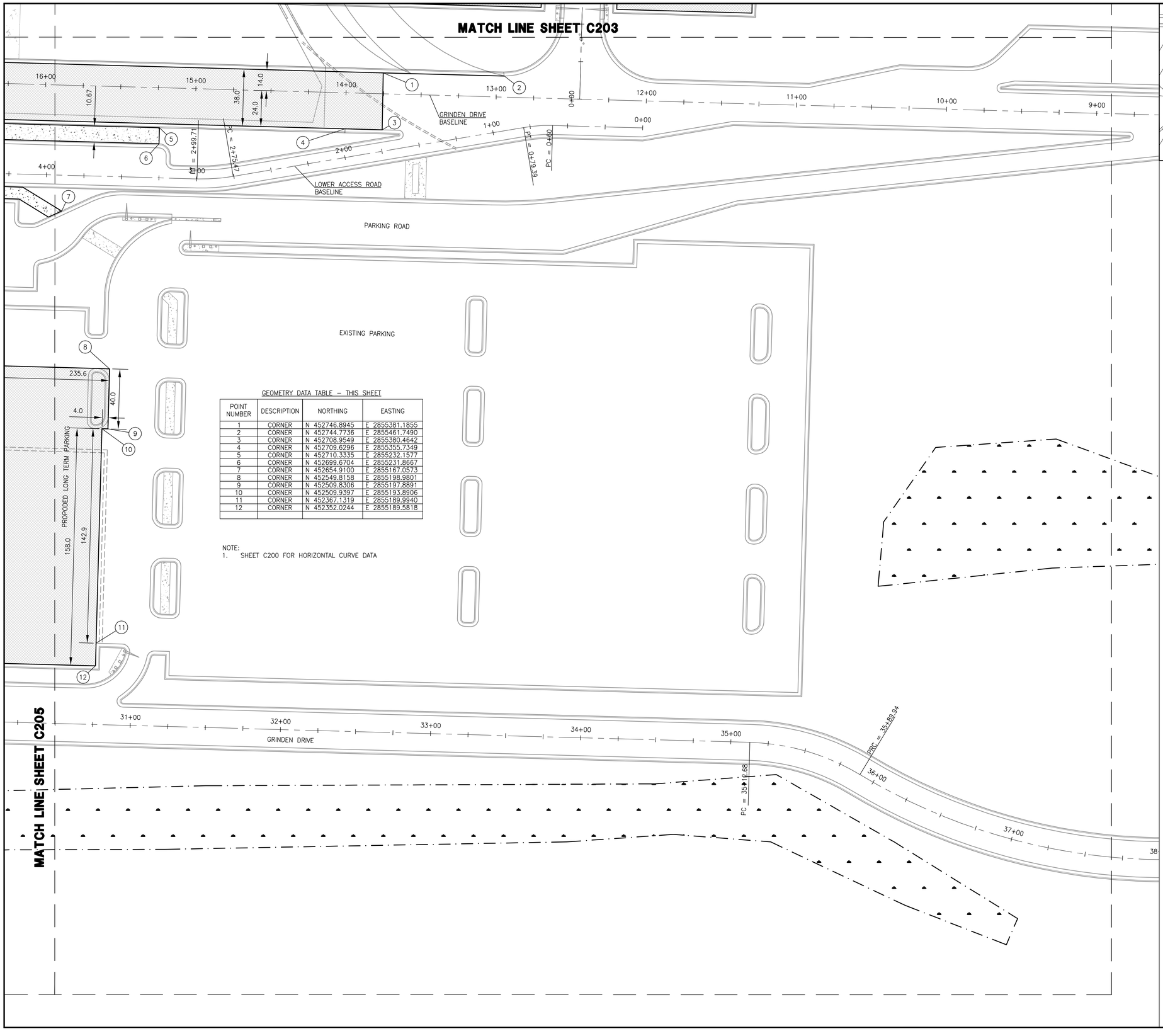
SHEET TITLE

GEOMETRY PLAN (SHEET 5 OF 6)

SHEET NUMBER
C205

90% NOT FOR CONSTRUCTION

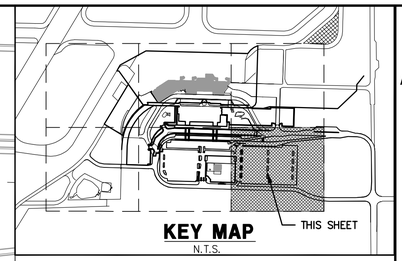
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GEOMETRY DATA TABLE – THIS SHEET

POINT NUMBER	DESCRIPTION	NORTHING	EASTING
1	CORNER	N 452746.8945	E 2855381.1855
2	CORNER	N 452744.7736	E 2855461.7490
3	CORNER	N 452708.9549	E 2855380.4642
4	CORNER	N 452709.6296	E 2855355.7349
5	CORNER	N 452710.3335	E 2855232.1577
6	CORNER	N 452699.6704	E 2855231.8667
7	CORNER	N 452654.9100	E 2855167.0573
8	CORNER	N 452549.8158	E 2855198.9801
9	CORNER	N 452509.8306	E 2855197.8891
10	CORNER	N 452509.9397	E 2855193.8906
11	CORNER	N 452367.1319	E 2855189.9940
12	CORNER	N 452352.0244	E 2855189.5818

NOTE:
1. SHEET C200 FOR HORIZONTAL CURVE DATA



KEY MAP
N.T.S.

NORTH

0 30' 60'

GEOMETRY NOTES

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4. SEE TYPICAL PAVEMENT SECTION AND DETAILS SHEETS C207–C210. PAVING IN THIS CONTRACT CONSISTS OF THE GRINDEN DRIVE, LOWER ACCESS ROAD, AND TEMPORY ROAD, AND PAVING OF THE EMPLOYEE PARKING LOTS.
5. REFER TO SHEET C200 FOR HORIZONTAL CONTROL DATA.
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Print Name: JOHN E. HIPPCHEN

Signature:

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: -
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

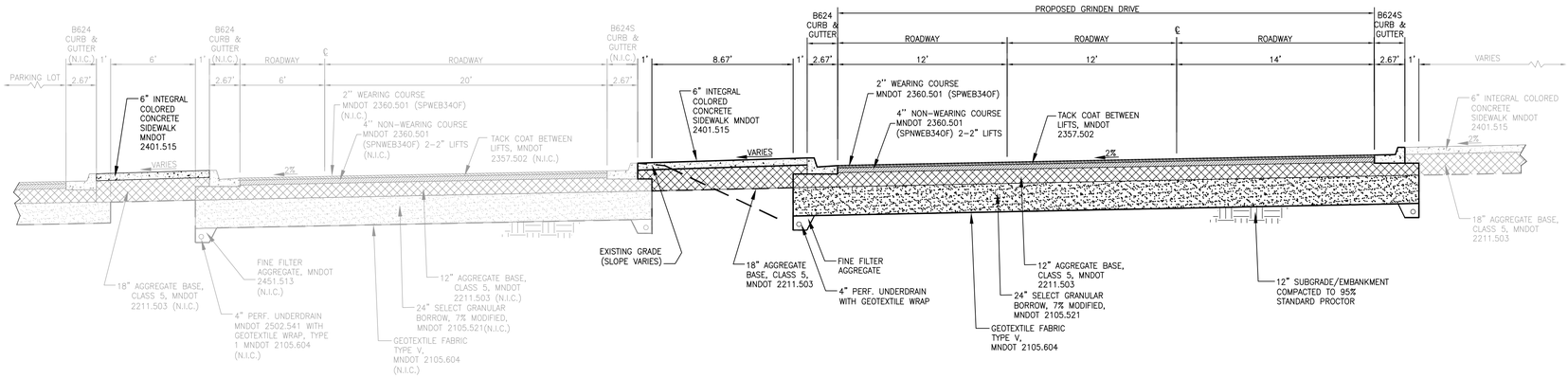
GEOMETRY PLAN (SHEET 6 OF 6)

SHEET NUMBER

C206

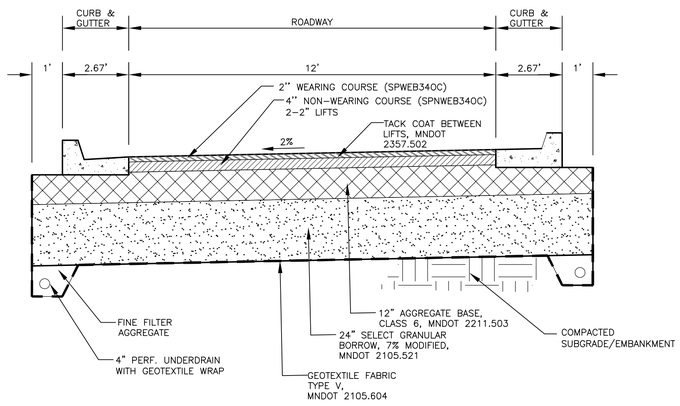
90% NOT FOR CONSTRUCTION

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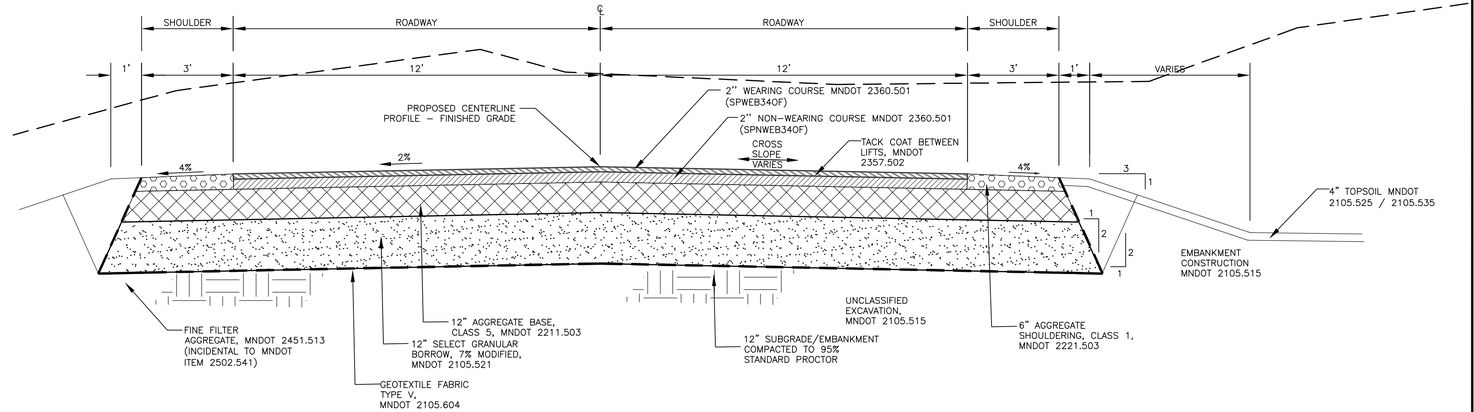
PROPOSED TYPICAL SECTION 'A'
LOWER ACCESS ROAD & PROPOSED GRINDEN DRIVE

N.T.S.



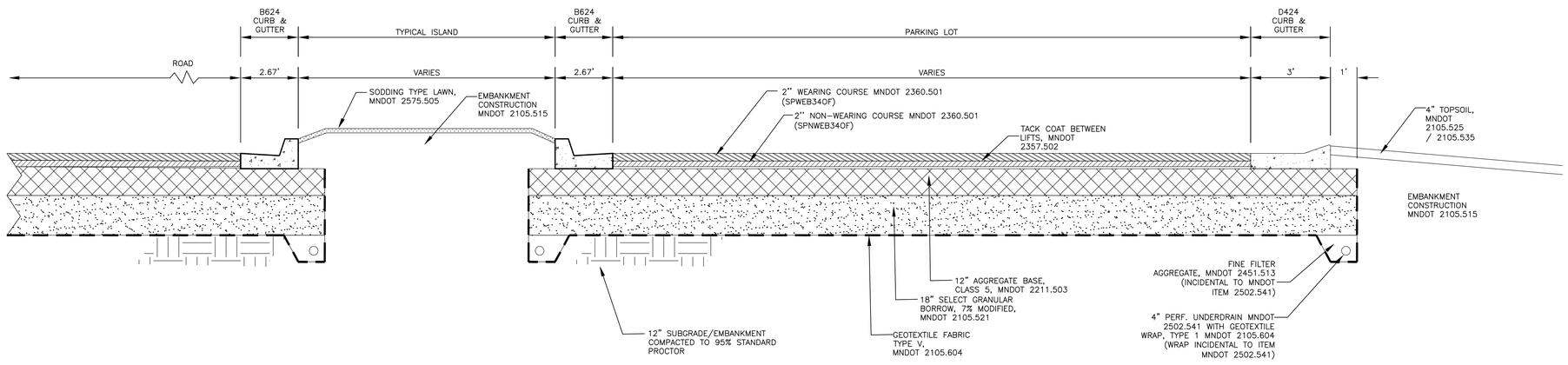
PROPOSED TYPICAL SECTION 'C'
LOWER ACCESS ROAD

N.T.S.



PROPOSED TYPICAL SECTION 'B'
TEMPORARY RD TO EMPLOYEE PARKING & AIRPORT ACCESS RD

N.T.S.



PROPOSED TYPICAL SECTION 'D'
PARKING LOT AND ENGINEERED SECTION

N.T.S.

NOTE: AREAS DEFINED AS ENGINEERED SECTION SHALL BE CONSTRUCTED PER SECTION 'D' ABOVE WITHOUT THE BITUMINOUS PAVEMENT, OR THE CONCRETE CURB AND GUTTER.

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Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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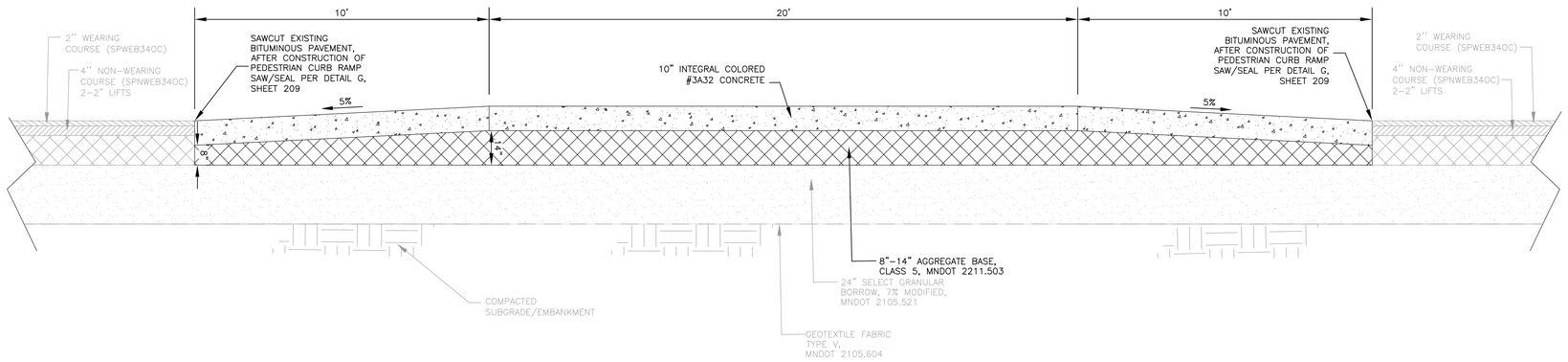
SHEET TITLE
TYPICAL PAVEMENT SECTIONS (SHEET 1 OF 2)

SHEET NUMBER
C207

90% NOT FOR CONSTRUCTION

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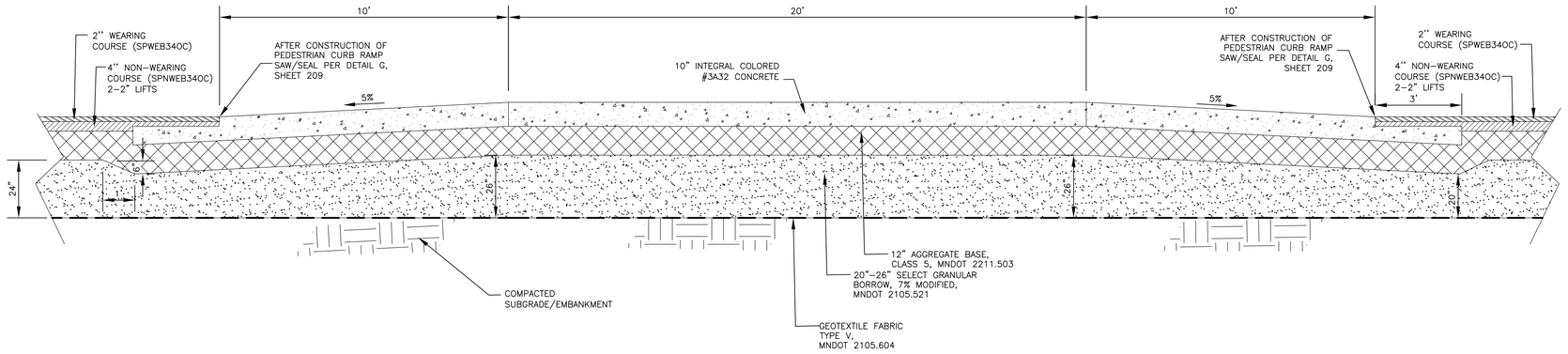
T:\P2131882.099 DLH Terminal Design Phase 2\CAD\CSH-C207.dwg, 4/6/2010 9:31:48 AM



NOTE:
1. ALL SAW AND SEAL JOINTS, AND DOWEL BARS SHALL BE INCEDENTAL TO MNDOT 2531.602/00030 PEDESTRIAN CURB RAMP (TYPE SPECIAL).

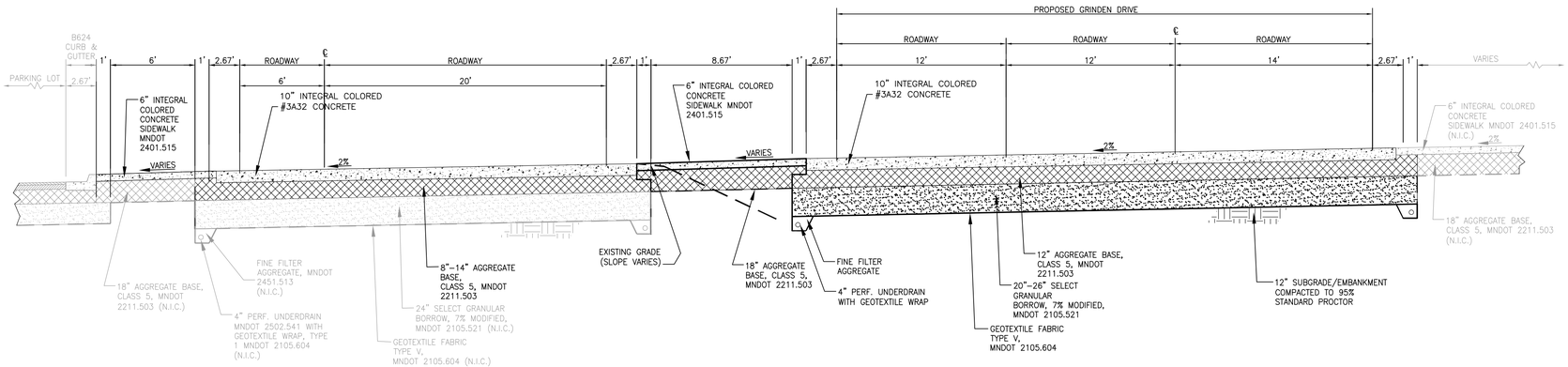
PROPOSED TYPICAL SECTION 'E' PEDESTRIAN CURB RAMP - LOWER ACCESS ROAD (TYPE SPECIAL)

N.T.S.



PROPOSED TYPICAL SECTION 'F' PEDESTRIAN CURB RAMP - GRINDEN DRIVE (TYPE SPECIAL)

N.T.S.



PROPOSED TYPICAL SECTION 'G' PEDESTRIAN CURB RAMP (TYPE SPECIAL)

N.T.S.

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Signature:

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AEP PROJECT NUMBER
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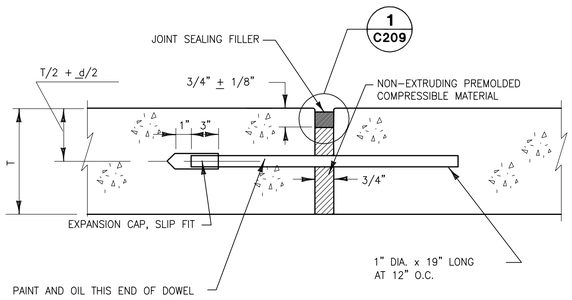
SHEET TITLE
TYPICAL PAVEMENT SECTIONS (SHEET 2 OF 2)

SHEET NUMBER
C208

90% NOT FOR CONSTRUCTION

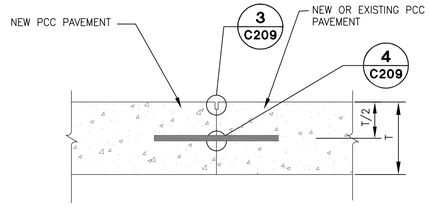
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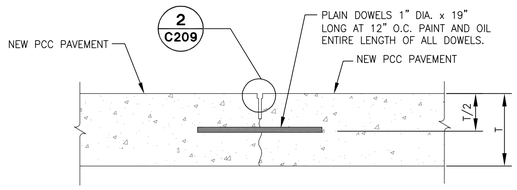


A TYPE A - DOWELED JOINT
N.T.S.

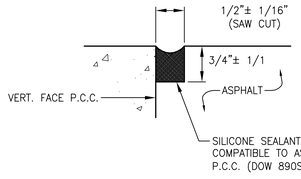
NOTE:
ALL JOINTS MUST BE ADEQUATELY CLEANED AFTER SAWCUTTING, IMMEDIATELY PRIOR TO THE INSTALLATION OF JOINT SEALANT.



D TYPE D CONSTRUCTION JOINT DETAIL
N.T.S.

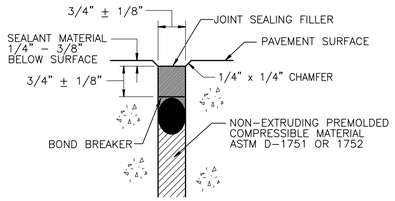


F TYPE F CONTRACTION JOINT DETAIL
N.T.S.

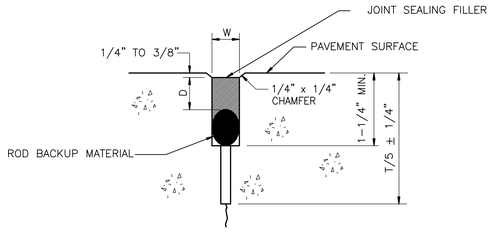


G TYPICAL SAW/SEAL CONTRACTION JOINT DETAIL
N.T.S.

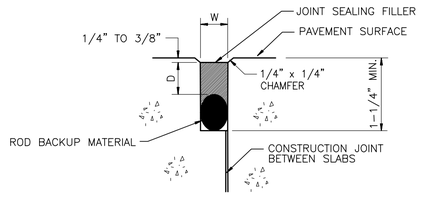
NOTE:
THE CONTRACTOR SHALL FORM THE P.C.C. TO PROVIDE A VERTICAL FACE AFTER PLACEMENT OF ASPHALT, THE CONTRACTOR SHALL SAW AND SEAL, AS SHOWN.



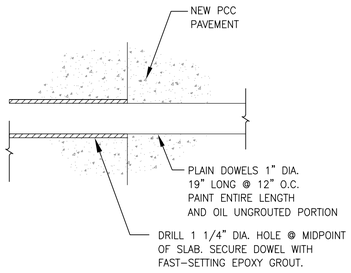
DETAIL 1 - EXPANSION JOINT
N.T.S.



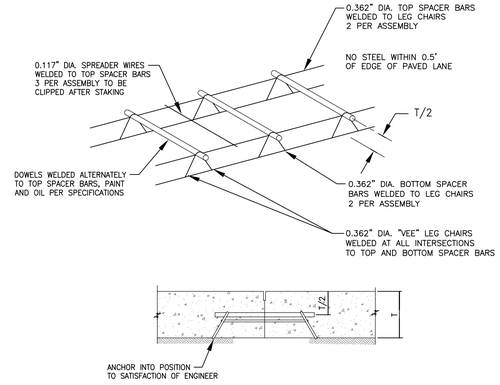
DETAIL 2 - CONTRACTION JOINT
N.T.S.



DETAIL 3 - CONSTRUCTION JOINT
N.T.S.



DETAIL 4 - DOWEL DETAIL
N.T.S.



TYPICAL DOWEL AND TIE-BAR BASKET
N.T.S.

NOTES:
1. BASKET MUST BE FIRMLY ATTACHED TO EXISTING OR NEW BASE PRIOR TO PLACING PCC.
2. ALL WIRE SIZES SHOWN ARE MINIMUM SIZE.
3. DOWELS SHALL BE HELD FIRMLY IN THE ABOVE WELDED ASSEMBLY.
4. THE TOLERANCE FOR DOWEL ALIGNMENT IN EITHER HORIZONTAL OR VERTICAL PLANE IS 1/4"/FT.
5. DOWEL BARS SHALL BE EVENLY SPACED ACROSS EACH PANEL WITH NO BAR BEING LESS THAN ONE FOOT FROM THE PANEL EDGE.

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Print Name: JOHN E. HIPPCHEN

Signature:

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

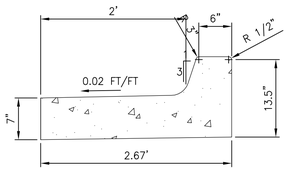
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SHEET TITLE

CONCRETE PAVEMENT JOINT DETAILS

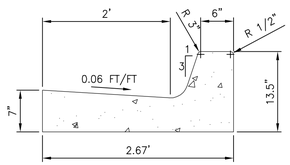
SHEET NUMBER
C209

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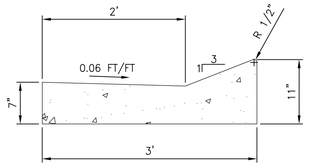
DESIGN B624 - SPILL: CURB AND GUTTER DETAIL

N.T.S.



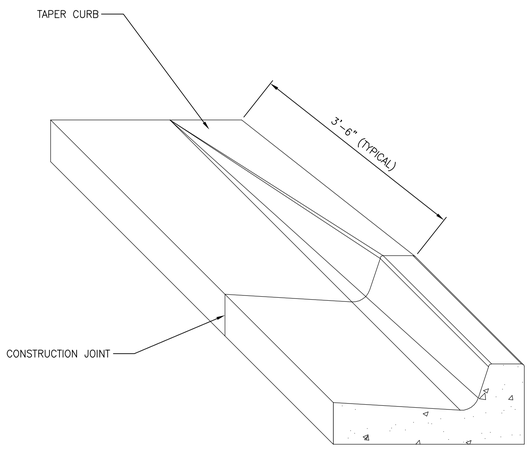
DESIGN B624 - NORMAL: CURB AND GUTTER DETAIL

N.T.S.



DESIGN D424 - NORMAL: CURB AND GUTTER DETAIL

N.T.S.

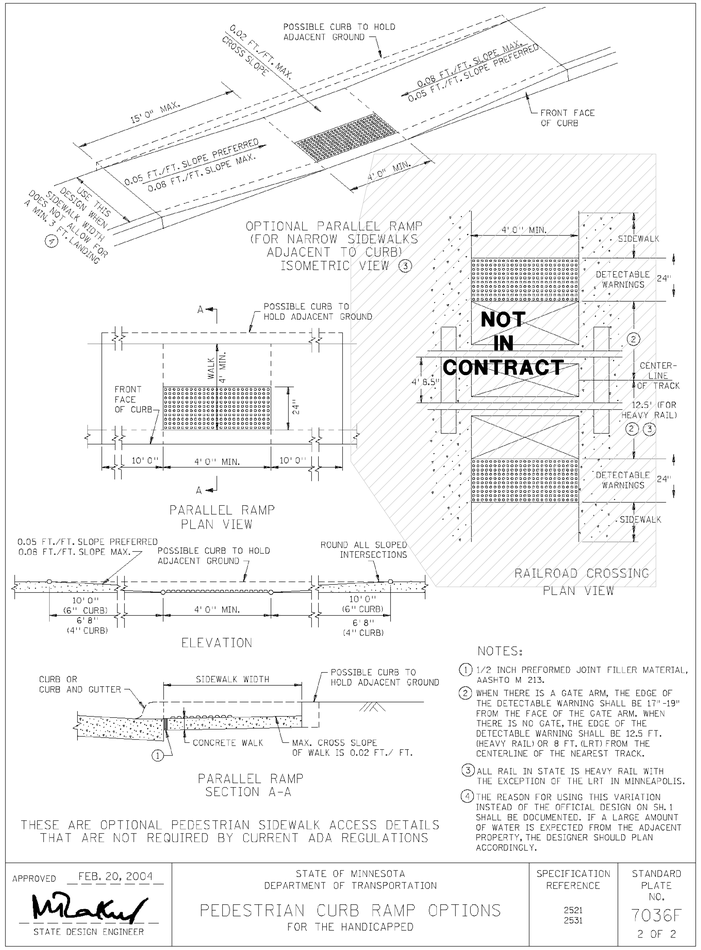


DETAIL OF CURB AND GUTTER TERMINATION

N.T.S.

NOTES:

1. SEE PLAN SHEETS FOR LOCATIONS OF EACH TYPE OF CURB AND GUTTER.
2. FORMS MAY BE TILTED TO ACHIEVE THE SPECIFIED SLOPE.



THESE ARE OPTIONAL PEDESTRIAN SIDEWALK ACCESS DETAILS THAT ARE NOT REQUIRED BY CURRENT ADA REGULATIONS

NOTES:

① 1/2 INCH PREFORMED JOINT FILLER MATERIAL, AASHTO M 213.

② WHEN THERE IS A GATE ARM, THE EDGE OF THE DETECTABLE WARNING SHALL BE 17"-19" FROM THE FACE OF THE GATE ARM. WHEN THERE IS NO GATE, THE EDGE OF THE DETECTABLE WARNING SHALL BE 12.5 FT. (HEAVY RAIL) OR 8 FT. (LRT) FROM THE CENTERLINE OF THE NEAREST TRACK.

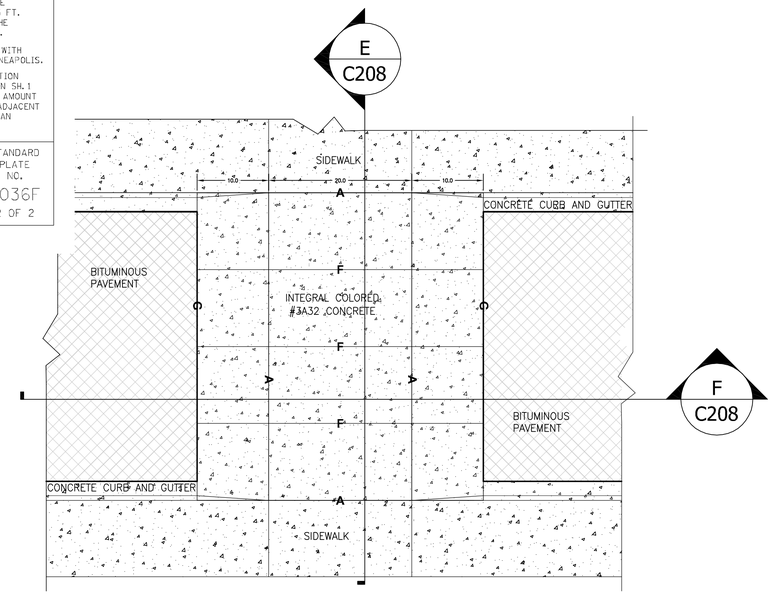
③ ALL RAIL IN STATE IS HEAVY RAIL WITH THE EXCEPTION OF THE LRT IN MINNEAPOLIS.

④ THE REASON FOR USING THIS VARIATION INSTEAD OF THE OFFICIAL DESIGN ON SH.1 SHALL BE DOCUMENTED. IF A LARGE AMOUNT OF WATER IS EXPECTED FROM THE ADJACENT PROPERTY, THE DESIGNER SHOULD PLAN ACCORDINGLY.

APPROVED FEB. 20, 2004 — STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION — PEDESTRIAN CURB RAMP OPTIONS FOR THE HANDICAPPED	SPECIFICATION REFERENCE 2521 2531	STANDARD PLATE NO. 7036F 2 OF 2

LEGEND

- A — TYPE "A" DOWELED EXPANSION JOINT
- D — TYPE "D" DOWELED CONSTRUCTION
- E — SPECIAL THICKENED EDGE
- F — TYPE "F" DOWELED CONTRACTION

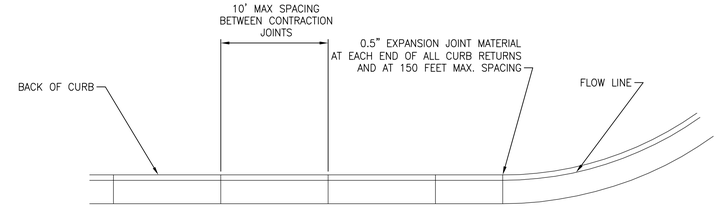


PROPOSED TYPICAL SECTION 'D' PEDESTRIAN CURB RAMP (TYPE SPECIAL) PLAN VIEW

N.T.S.

NOTE:

1. ALL SAW AND SEAL, AND DOWEL BARS SHALL BE INCEDENTAL TO MNDOT 2531.602/00030 PEDESTRIAN CURB RAMP (TYPE SPECIAL).
2. CONTRACTOR SHALL CONSTRUCT THREE TYPE 'F' CONTRACTION JOINTS PARALLEL TO CENTERLINE ON GRINDEN DRIVE AND TWO TYPE 'F' CONTRACTION JOINTS ON LOWER ACCESS ROAD.
3. TYPE 'D' DOWELED JOINTS SHOWN FOR CONSTRUCTION PURPOSES.



CURB AND GUTTER LAYOUT DETAIL

N.T.S.

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SHEET TITLE

TYPICAL CURB AND GUTTER DETAILS

SHEET NUMBER

C210

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FENCING NOTES

1. THE DEMOLITION OF FENCE SHALL INCLUDE THE COMPLETE REMOVAL AND DISPOSAL OF THERE CONTENTS, FOUNDATIONS. ANY UNFILLED EXCAVATION OR OTHER HAZARD LEFT UNATTENDED DURING PERIODS OF INACTIVITY SHALL BE PROPERLY FENCED OR PROTECTED BY THE CONTRACTOR. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE FENCE DEMOLITION.

2. THERE ARE EXISTING UNDERGROUND ELECTRICAL AND COMMUNICATIONS CABLES IN THE PROJECT WORK AREAS. THE ENGINEER HAS MADE EVERY EFFORT TO SHOW THEIR APPROXIMATE LOCATIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE EVERY CABLE LOCATED, FLAGGED AND IDENTIFIED PRIOR TO CONSTRUCTION. ANY DAMAGE DONE TO FLAGGED OR OTHERWISE LOCATED CABLES SHALL BE REPLACED AT THE CONTRACTORS EXPENSE. LOCATION OF EXISTING UTILITIES MAY BE DONE BY CALLING GOPHER STATE ONE CALL 1-800-252-1166 TO NOTIFY LOCAL UTILITIES. THIS IS REQUIRED BY LAW.

3. ALL EXISTING AIRPORT SIGNAGE ON ANY FENCING DEMOLITION WILL BE SALVAGED AND TURNED OVER TO THE OWNER.

4. A SECURE PERIMETER MUST BE MAINTAINED AT ALL TIMES. ALL EMPLOYEES, AGENTS, VENDORS, INVITEES, ETC. OF THE CONTRACTOR OR SUBCONTRACTORS WORKING IN THE AIRCRAFT OPERATIONS AREA (AOA) SHALL, IN ACCORDANCE WITH THE AIRPORT OPERATIONS SECURITY PROGRAM, BE REQUIRED TO DISPLAY AIRPORT ISSUED IDENTIFICATION OR BE UNDER ESCORT BY PROPERLY BADGED PERSONNEL. THESE BADGES WILL BE IDENTIFIED NUMERICALLY AND ISSUED TO INDIVIDUAL EMPLOYEES WITH A PERMANENT RECORD MAINTAINED ON EACH INDIVIDUAL TO WHOM A BADGE IS ISSUED. SEE SECURITY NOTES, SHEET C003.

GENERAL NOTES

1. DIMENSIONS:
   ALL DIMENSIONS, SIZES, GAUGES, WEIGHTS, OR THICKNESSES SHOWN ARE THE MINIMUM ACCEPTABLE, UNLESS OTHERWISE INDICATED

2. SPECIFICATIONS:
   THE FEDERAL SPECIFICATIONS SHOWN SHALL BE INTERPRETED TO MEAN THE LATEST ISSUE OR AMENDMENT OF SUCH SPECIFICATION, IN EFFECT ON THE DATE OF PLAN APPROVAL FAA SPECIFICATIONS SHOWN ARE FROM THE FEDERAL AVIATION ADMINISTRATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF AIRPORTS" MATERIALS AND CONSTRUCTION METHODS NOT DETAILED HEREON, SHALL BE IN ACCORDANCE WITH THE FAA SPECIFICATION LISTED FOR EACH CLASS OF FENCE, UNLESS OTHERWISE NOTED ON THE CONTRACT PLANS. GATES ARE MEASURED IN UNITS FOR EACH TYPE AND SIZE INSTALLED

3. FABRIC INSTALLATION:
   WIRE OR FABRIC ON BOUNDARY AND SECURITY FENCES SHALL BE ON THE SIDE OF POSTS AWAY FROM AIRPORT PROPERTY

   FENCES BETWEEN TERMINAL BUILDINGS AND APRONS, OR ADJACENT TO SIDEWALKS, SHALL HAVE FABRIC ON THE BUILDING OR SIDEWALK SIDE OF POSTS. ALL OTHER BUILDING AREA FENCES SHALL HAVE FABRIC ON SIDE OF POSTS AWAY FROM BUILDINGS OR INSTALLATION BEING FENCED, UNLESS OTHERWISE NOTED.

4. BARBED WIRE:
   BARBED WIRE SHALL BE ZINC COATED, MEETING REQUIREMENTS OF ASTM A 121, CLASS 3, WIRE SHALL BE TWO STRAND TWISTED No. 12-1/2 ASW GAUGE STEEL, WITH FOUR POINT BARBS, No.14 ASW GAUGE MINIMUM 1/2 " MINIMUM LENGTH, SPACED ON APPROXIMATELY 5" CENTERS. THE BARB WIRE SHALL BE ATTACHED TO 45 DEGREE ARMS. TENSION SHALL BE TO SATISFACTION OF THE ENGINEER. NO CRIMPING OR SPLICING SHALL BE USED TO OBTAIN PROPER TENSION. EACH POST SHALL HAVE PLACEMENT ARM AND 3-STRANDS OF BARBED WIRE SHALL BE CONTINUOUS. TYPE I, EXTENSION ARMS ARE REQUIRED.

5. CONCRETE:
   CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI. FOOTING TOPS SHALL BE 1" MINIMUM ABOVE GROUND AT THE POST, AND TROWEL FINISHED TO SLOPE AWAY FROM POST.

6. OPENINGS UNDER FENCE:
   ANY OPENING UNDER FENCES, WHEREIN THE BOTTOM FENCE WIRE IS MORE THAN 4" ABOVE GROUND AND THE TOTAL AREA OF OPENING IS 96 SQ. INCHES OR MORE, SHALL BE CLOSED.

   OPENINGS LESS THAN 18" HIGH SHALL BE CLOSED BY INSTALLING ONE OR MORE ADDITIONAL LINE POSTS NEAR THE OPENING CENTER AND STRETCHING STRANDS OF BARBED WIRE BETWEEN THE EXTRA POSTS AND ADJACENT LINE POSTS AT 6" MAXIMUM VERTICAL SPACING, VERTICAL STRANDS OF BARBED WIRE SHALL BE INSTALLED AT 12" MAXIMUM HORIZONTAL SPACING AND TIED TO ALL HORIZONTAL STRANDS AND THE FABRIC BOTTOM WIRE. THIS WORK SHALL BE INCIDENTAL TO FENCE INSTALLATION COSTS.

   OPENINGS 18" OR MORE IN HEIGHT, OPENINGS IN HIGH SECURITY RISK AND HAZARD AREAS, DITCHES, DRAINAGE COURSES, ETC., SHALL BE CLOSED BY METHODS DETAILED ON THE CONTRACT PLANS. PAYMENT FOR CLOSURES DETAILED ON THE PLANS SHALL BE AS NOTED ON THE CONTRACT PLANS.

7. GROUND RODS:
   GROUND RODS SHALL BE INSTALLED AT 400' MAXIMUM INTERVALS, INCIDENTAL TO FENCE COST. EACH SECTION OF FENCE SEPARATED BY NON-METALLIC CONNECTORS, BUILDINGS OR OTHER OPENINGS SHALL HAVE A MINIMUM OF ONE GROUND ROD. EACH GATE LEAF FRAME SHALL BE CONNECTED TO THE GATE POST BY A BRAIDED FLEXIBLE COPPER STRAP. EACH GATE POST SHALL BE GROUNDED AS DETAILED. GROUND RODS SHALL BE 5/8" x 8' MIN. SIZE, COPPER CLAD. ALL GROUND RODS TO BE TESTED WITH MAXIMUM RESISTANCE TO GROUND OF 10 OHMS. GROUND CABLE SHALL BE NO. 4 AWG. MIN., BARE STRANDED COPPER WIRE. FOR FENCES GROUNDING SHALL BE AS DETAILED. IF GROUNDING IS REQ'D THROUGH EXISTING RUNWAY/TAXIWAY/APRON PAVEMENT, CONTRACTOR SHALL CORE A 4-INCH HOLE THROUGH THE PAVEMENT AND PLACE REQUIRED GROUND ROD. CONNECTIONS TO FENCE AND RODS SHALL BE MADE WITH SUITABLE NON-CORROSIVE METAL CLAMPS, LUG OR CONNECTORS.

8. FENCE LINE AND ALIGNMENT:
   FENCE LINES SHALL BE CLEARED OF ALL OBSTRUCTIONS AND SMOOTH GRADED TO THE GENERAL CONTOUR OF THE ADJACENT GROUND FOR A 10' MIN. WIDTH EACH SIDE OF LINE. STUMPS AND ROOTS NOT INTERFERING WITH FENCE CONSTRUCTION, MAY BE CHIPPED TO GROUND LEVEL

   THE FENCE SHALL BE CONSTRUCTED VERTICAL, STRAIGHT AND TRUE TO LINE. THE LONGITUDINAL GRADIENT SHALL PARALLEL THE GENERAL SLOPE OF THE GROUND.

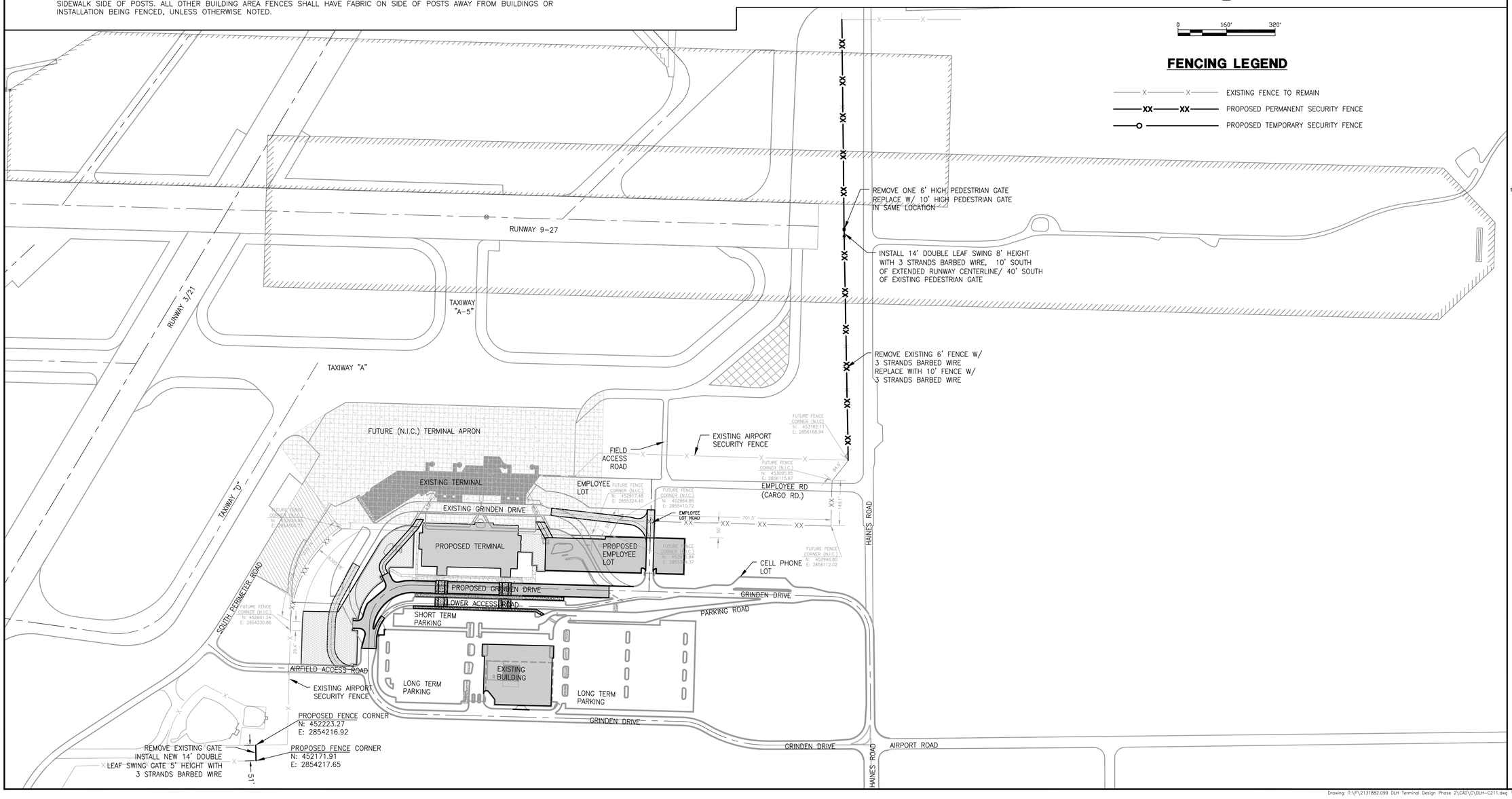
9. FENCE SIGNAGE:
   ANY NEW SIGNS TO BE PLACED ON NEW OR EXISTING FENCING MATERIALS SHALL BE DETAILED ON THE PLANS. ALL FURNISHING AND INSTALLING OF SIGNAGE IS INCIDENTAL TO ITEM F-162.

NORTH

0 160' 320'

FENCING LEGEND

- EXISTING FENCE TO REMAIN
- PROPOSED PERMANENT SECURITY FENCE
- PROPOSED TEMPORARY SECURITY FENCE



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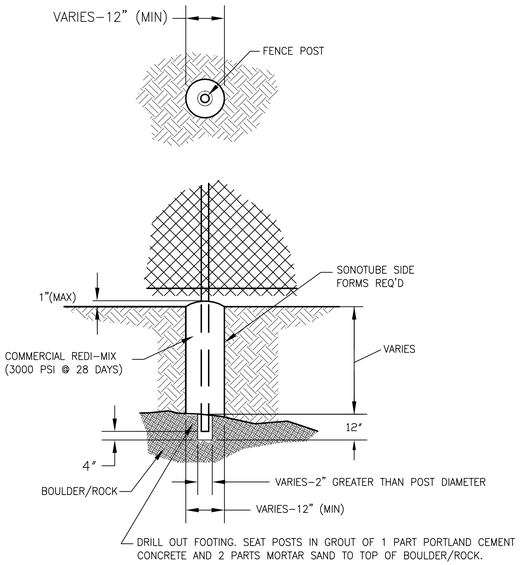
FENCING LAYOUT SITE PLAN AND NOTES

SHEET NUMBER

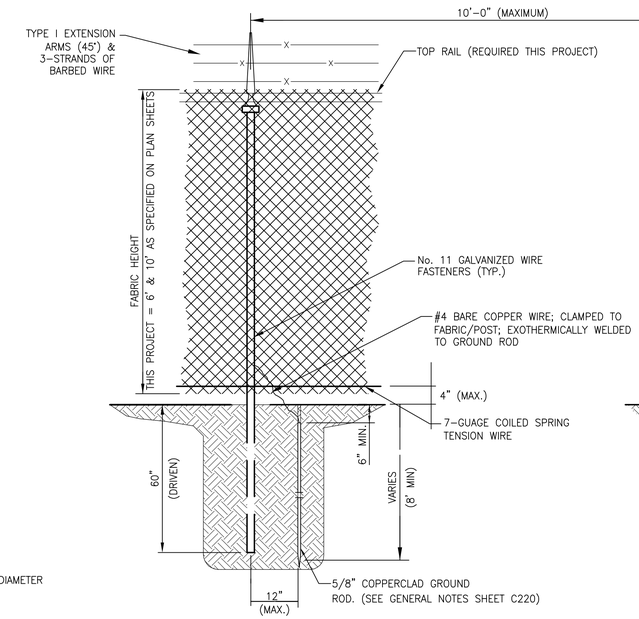
C211

90% NOT FOR CONSTRUCTION

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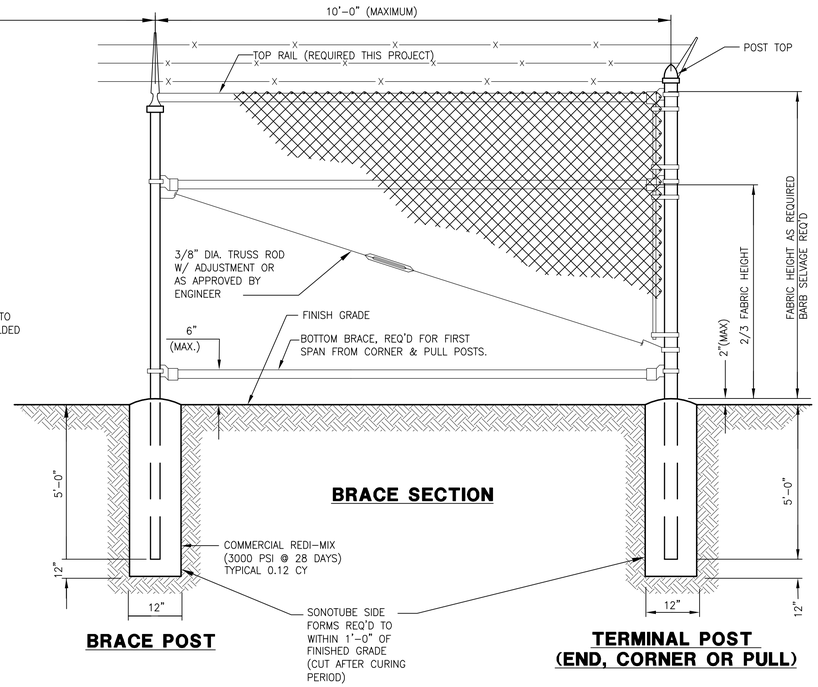
BOULDER/ROCK FOOTING DETAIL



TURF LINE POST (INTERMEDIATE)

POST NOTES:

1. SEE TABLE THIS SHEET FOR POST DIMENSIONS AND UNIT WEIGHT PER FOOT REQUIREMENT.



BRACE SECTION

BRACE POST

TERMINAL POST (END, CORNER OR PULL)

CHAIN LINK FENCE, CLASS E, FAA SPEC. F-162

NTS

TYPICAL CHAIN LINK FENCE MEMBERS, DIMENSIONS & WEIGHTS

DESCRIPTION	SECTION	STEEL FRAME	
		OUTSIDE DIMENSION (INCHES)	WEIGHT (LBS/FT.)
CORNER, BRACE, END AND PULL POSTS	○	2.375	3.65
FABRIC HEIGHTS 6 ft AND LESS	□	2.00	3.60
FABRIC HEIGHTS OVER 6 ft	○	2.875	5.79
	□	2.5	5.70
ALL HEIGHTS	ROLL FORM	3.5x3.5	5.10
GATE POSTS	○	3 OR 4	5.79
GATE LEAF WIDTH 6 ft AND LESS	□	2.5	5.70
	ROLL FORM	3.5x3.5	5.10
GATE WIDTH OVER 6 ft THRU 13 ft	○	4.0	9.11
GATE LEAF WIDTH OVER 13 ft THRU 18 ft	○	6.625	18.97
GATE LEAF WIDTH OVER 18 ft THRU 23 ft	○	8.625	24.70
LINE POSTS			
FABRIC HEIGHTS 6 ft AND LESS	○	1.90	2.72
FABRIC HEIGHTS OVER 6 ft	○	2.375	3.65
RAILS & BRACES	○	1.660	1.806
	ROLL FORM	1.625x1.250	1.35

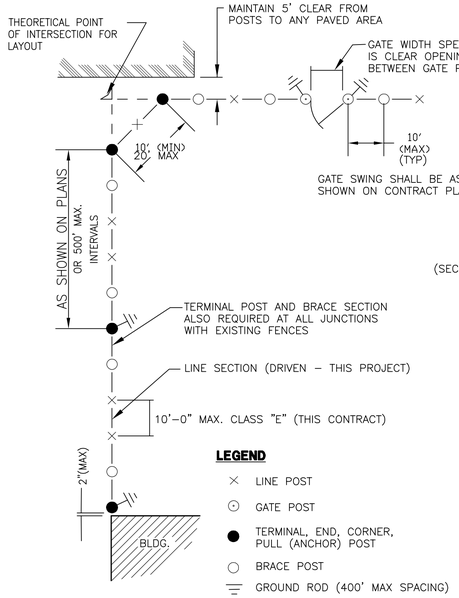
NOTES:

GALVANIZED STEEL PIPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F 1083.

POLYMER–COATED STEEL PIPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 569. POLYMER COATING SHALL BE IN ACCORDANCE WITH ASTM F 1234, TYPE B.

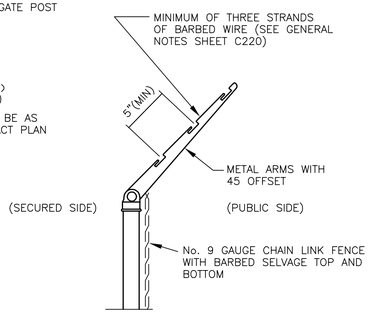
THE STEEL USED IN ALL STRUCTURAL SHAPES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 572, GRADE 45, AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM F 1234, TYPE A.

ROLL–FORMED SECTIONS SHALL BE FABRICATED FROM MATERIAL MEETING THE REQUIREMENTS OF ASTM A 570, GRADE 45, AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A 123, OR COATED WITH ZINC–5% ALUMINUM MISCHMETAL ALLOY IN ACCORDANCE WITH ASTM F 1234, TYPE C.



TYPICAL FENCE LAYOUT

ALL CLASSES

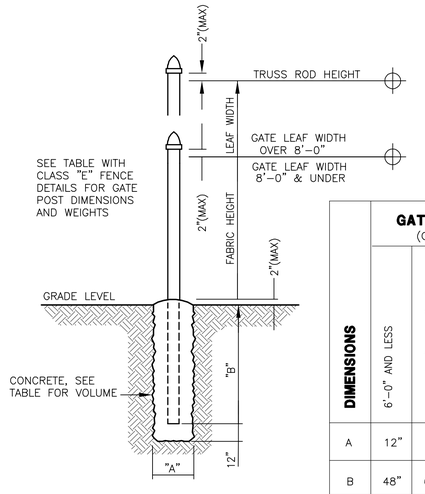


TYPE No.1

(REQUIRED THIS CONTRACT)

TYPE No. 1 ARMS SHALL BE INSTALLED ON SIDE AWAY FROM AIRPORT PROPERTY OR AIRCRAFT OPERATIONS AREA.

BARBED WIRE EXTENSION ARMS



DETAIL (TYP)

DIMENSIONS	GATE WIDTH (ONE LEAF)			
	6'–0" AND LESS	OVER 6'–0" TO 10'–0"	OVER 10'–0" TO 15'–0"	OVER 15'–0" TO 18'–0"
A	12"	16"	20"	24"
B	48"	66"	66"	66"
C.Y. CONC. *	0.15	0.42	0.53	0.76

* COST OF FURNISHING & PLACING CONCRETE INCIDENTAL TO COST OF EACH GATE

SCHEDULE

GATE POST & CONCRETE BASE

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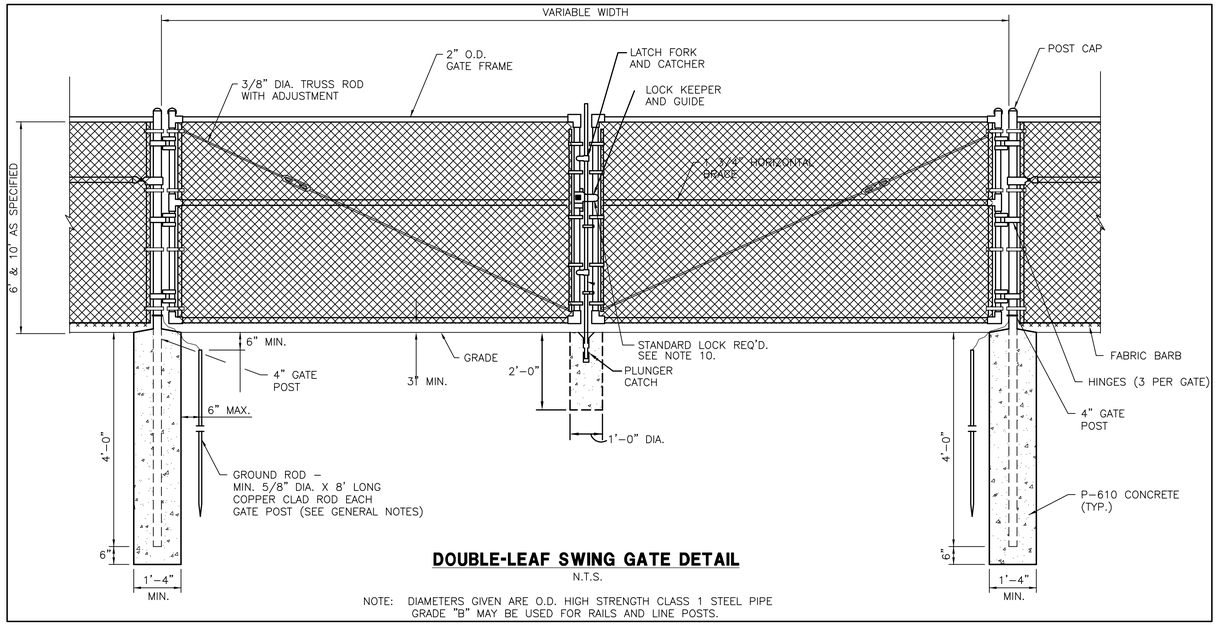
SHEET TITLE
FENCING AND GATE DETAILS (SHEET 1 OF 3)

SHEET NUMBER
C212

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH–C212.dwg Plotted on: 4/6/2010 9:35 AM Plotted by: Erdmann, Ryan

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DOUBLE-LEAF SWING GATE DETAIL

N.T.S.

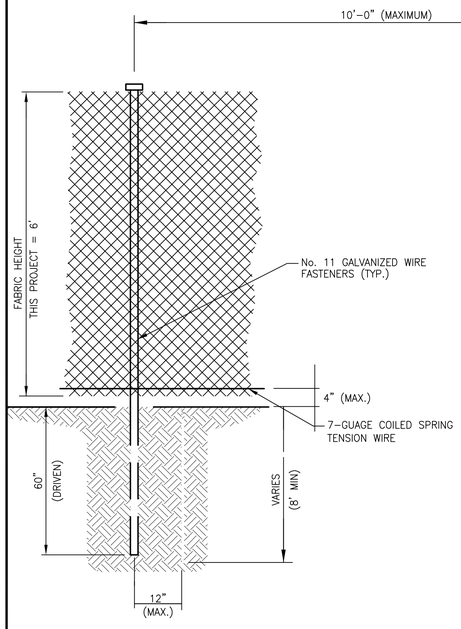
NOTE: DIAMETERS GIVEN ARE O.D. HIGH STRENGTH CLASS 1 STEEL PIPE GRADE "B" MAY BE USED FOR RAILS AND LINE POSTS.

GATE NOTES:

1. GATES SHALL HAVE A DEVICE WITH PROVISIONS FOR LOCKING. (SEE DETAIL #6 THIS SHEET)
2. WELDS ON STEEL FRAMES SHALL BE GROUND SMOOTH, THOROUGHLY CLEANED AND COVERED WITH ALUMINUM OR ZINC BASE PAINT.
3. GATES AND FITTINGS SHALL BE GALVANIZED STEEL PIPE PER REQUIREMENTS FOR POSTS, RAILS & BRACES
4. INSTALLATION SHALL MEET FAA SPEC. F-162, LATEST EDITION.
5. AS BARBED WIRE EXTENSION ARMS ARE SPECIFIED FOR FENCE, THE GATE POSTS SHALL BE EXTENDED 12" MINIMUM ABOVE THE TOP OF THE FENCE FABRIC, FOR TERMINATING THE BARBED WIRE.

F-162 FENCE NOTES:

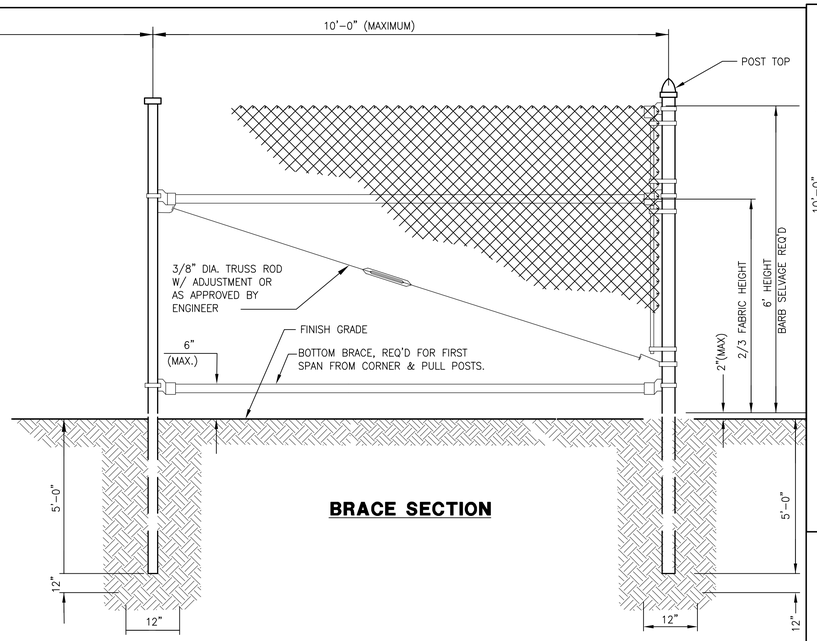
1. FABRIC: 2"X2" No. 9 GAUGE GALVANIZED STEEL WIRE MESH.
2. SELVAGE RAILS & TENSION WIRES: FENCES SHALL HAVE BARBED SELVAGE AND 7 GAUGE COILED SPRING TENSION WIRES PROVIDED, BOTTOM; KNUCKLED BARBED SELVAGE AND TOP RAIL, TOP.
3. POSTS: SEE SHEET C212.
4. FABRIC FASTENERS: MINIMUM 3/16" x 3/4" STRETCHER BAR, BANDED TO TERMINAL POSTS; OR INTEGRAL FABRIC FITTINGS ON TERMINAL POSTS. USE NO. 6 WIRE CLIPS FOR LINE POSTS AND NO. 9 WIRE CLIPS FOR BRACES, RAILS, AND TENSION WIRES. ALL FASTENERS SPACED 14" MAX. VERTICALLY, 24" MAX. HORIZONTALLY. ALL FABRIC FASTENERS SHALL BE SAME MATERIAL AS FENCE FABRIC BASE MATERIAL.
5. COATINGS: ZINC COATING ON POSTS, RAILS, GATE FRAMES AND STEEL FITTINGS SHALL AVERAGE 2.0 OZ./S.F. NO INDIVIDUAL SPECIMEN SHALL HAVE LESS THAN 1.8 OZ./S.F.
6. FENCE HEIGHT: THE FABRIC HEIGHT SHALL BE TEN (10') FEET OR AS DETAILED IN PLAN SHEETS.
7. BARBED WIRE: 3-STRANDS OF BARBED WIRE SHALL BE PLACED THIS CONTRACT.
8. POSTS IN PAVEMENT: POSTS SET IN EXISTING PAVEMENTS SHALL HAVE PAVEMENT CORED FULL DEPTH TO A DIAMETER THAT WILL PROVIDE 2" CLEAR TO POST ON ALL SIDES.
9. TIES: WIRE TIES SHALL BE OF THE SAME MATERIAL & COATING WEIGHT AS THE FABRIC TYPE WILL ALLOW ALUMINUM WIRE FASTENER TIES.



TEMPORARY FENCE POST

POST NOTES:

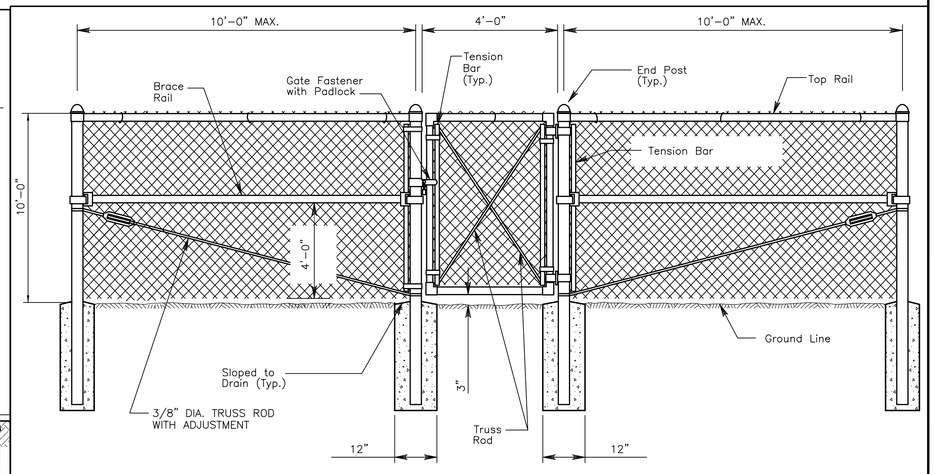
1. SEE TABLE ON SHEET C212 FOR POST DIMENSIONS AND UNIT WEIGHT PER FOOT REQUIREMENT.



BRACE SECTION

BRACE POST

TERMINAL POST (END, CORNER OR PULL)



PEDESTRIAN GATE DETAIL

N.T.S.

TEMPORARY CHAIN LINK FENCE, CLASS E, FAA SPEC. F-162

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Print Name: JOHN E. HIPPCHEN

Signature:

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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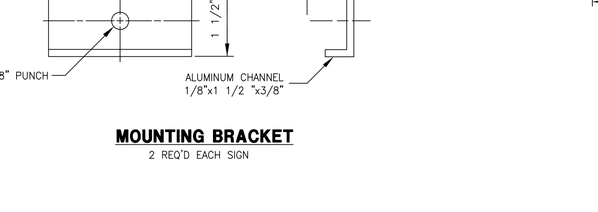
SHEET TITLE
FENCING AND GATE DETAILS (SHEET 2 OF 3)

SHEET NUMBER
C213

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C213.dwg Plotted on: 4/6/2010 9:17 AM Plotted by: Erdmann, Ryan

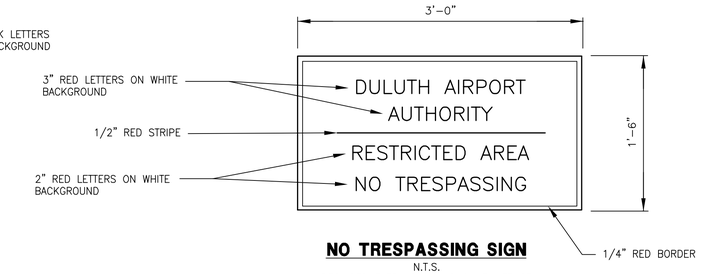




OPERATOR SIGN
N.T.S
(PLACED ON FRONT AND BACK OF EACH GATE)

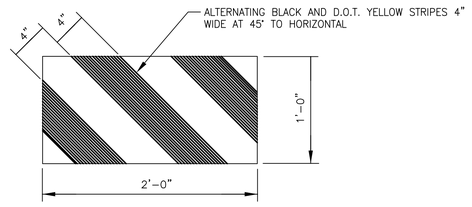
GATE SHALL BE GATE # 14V &





NO TRESPASSING SIGN
N.T.S.
REQUIRED EVERY 200' ALONG NEW FENCE AND AT EACH SIDE OF A CORNER
COST INCIDENTAL TO PROPOSED FENCE (FACING NON-AOA SIDE)





BARRICADE SIGN
N.T.S.
ONE EACH FOR EACH LEAF OF GATE (BOTH SIDES)

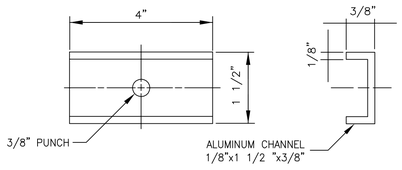
SIGN DETAILS

SIGNS TO BE ALUMINUM OR GALVANIZED STEEL WITH A MINIMUM THICKNESS OF 0.08".

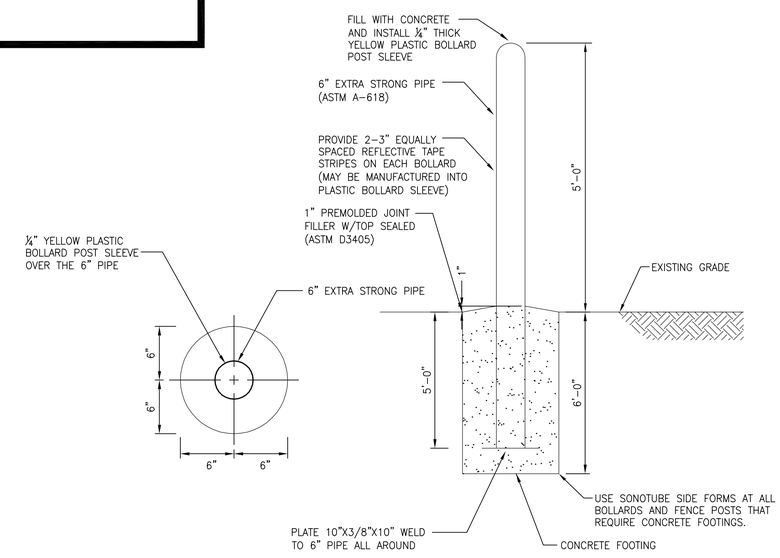
REFLECTORIZED MEDIA TO BE USED.

COST OF SIGNS SHALL BE CONSIDERED INCIDENTAL TO ASSOCIATED ITEMS REQUIRING SIGNS.

ALL SIGNS TO BE MOUNTED USING A MINIMUM OF 2 BRACKETS.



MOUNTING BRACKET
2 REQ'D EACH SIGN



CONCRETE BOLLARD POST DETAIL
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Signature:

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DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
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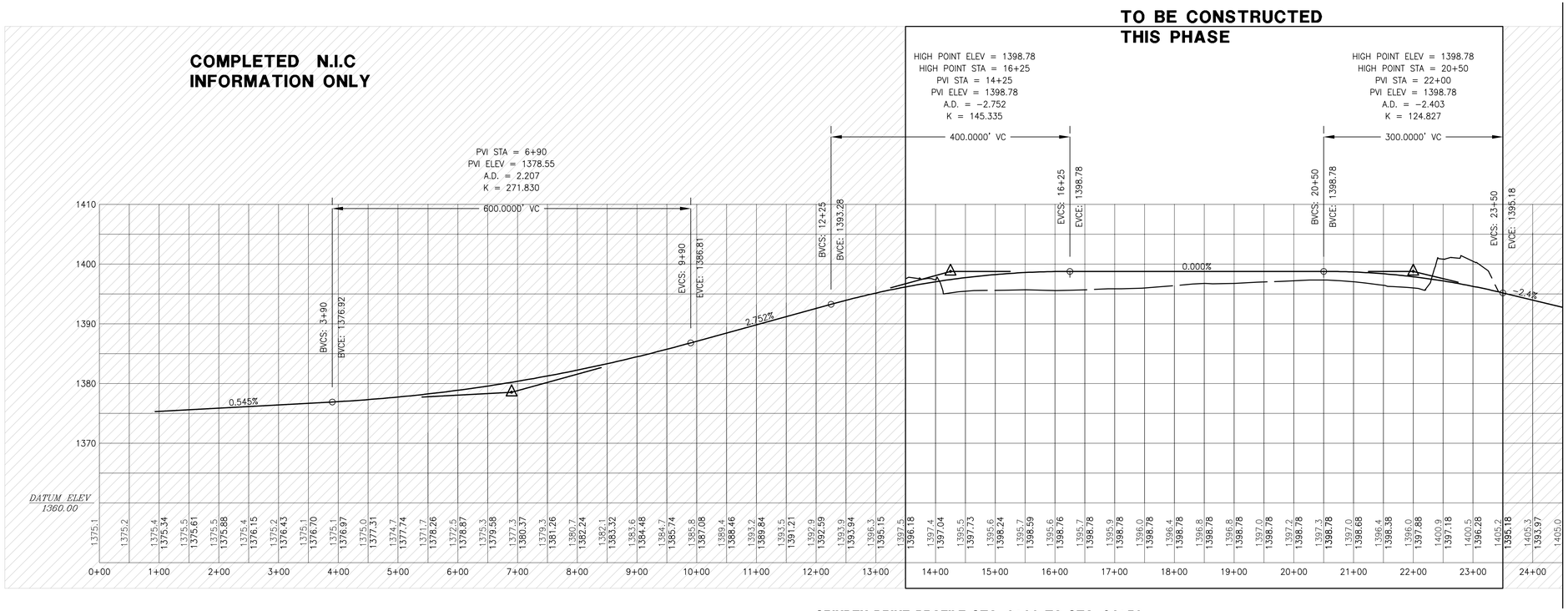
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SHEET TITLE
FENCING AND GATE DETAILS (SHEET 3 OF 3)

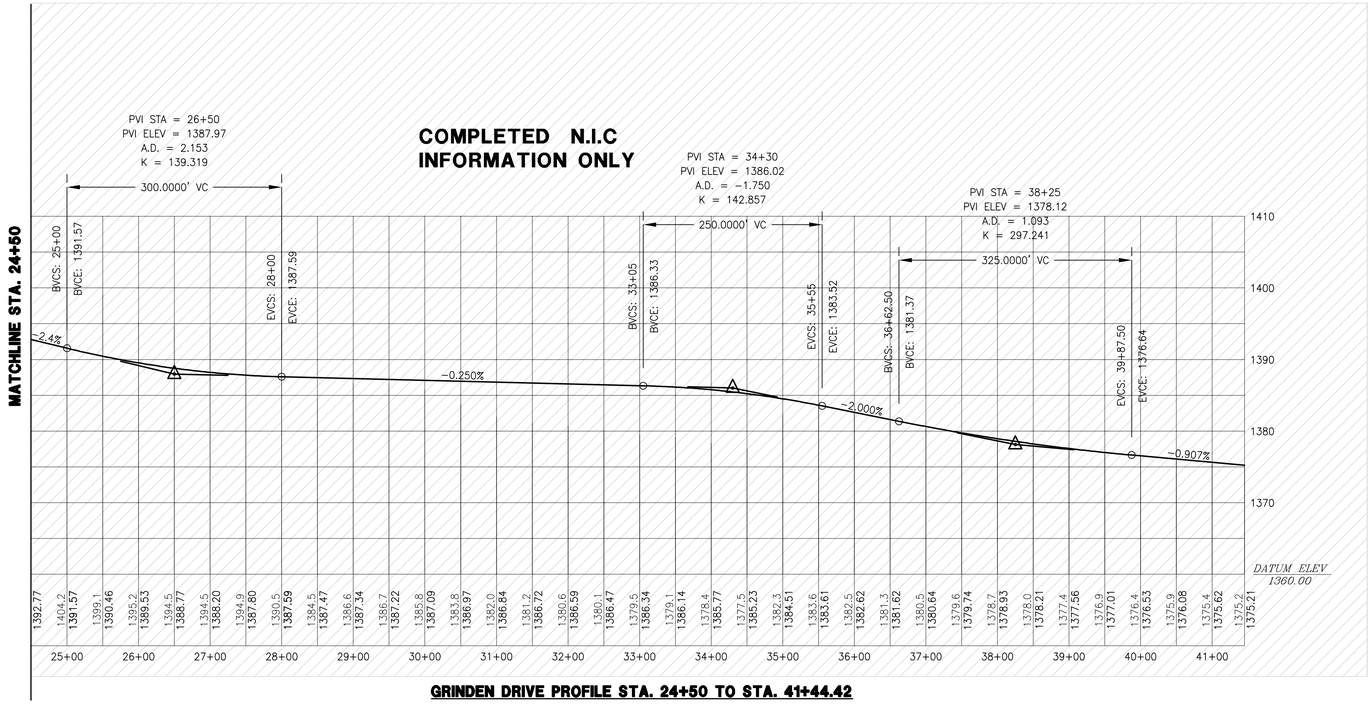
SHEET NUMBER
C214

90% NOT FOR CONSTRUCTION

T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C214.dwg, 4/6/2010 9:37:22 AM



GRINDEN DRIVE PROFILE STA. 0+00 TO STA. 24+50



GRINDEN DRIVE PROFILE STA. 24+50 TO STA. 41+44.42

HORIZ. SCALE: 1"= 100'
100' 50' 0 100'

VERT. SCALE: 1"= 10'
10' 5' 0 10'

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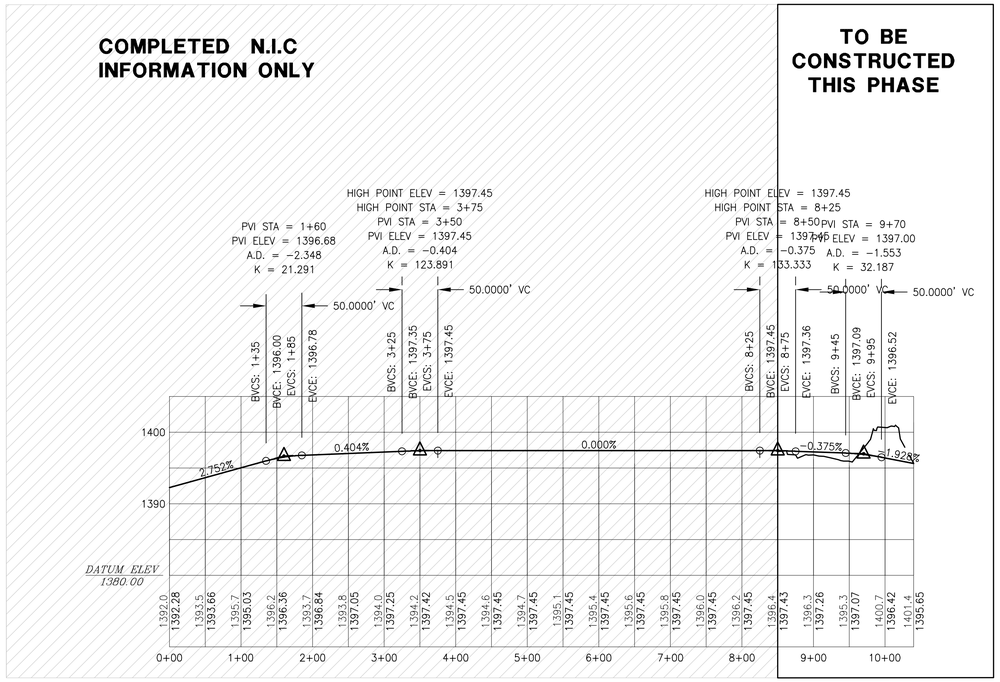
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SHEET TITLE
CENTERLINE PROFILE GRINDEN DRIVE STA: 0+00 TO STA: 41+44.42

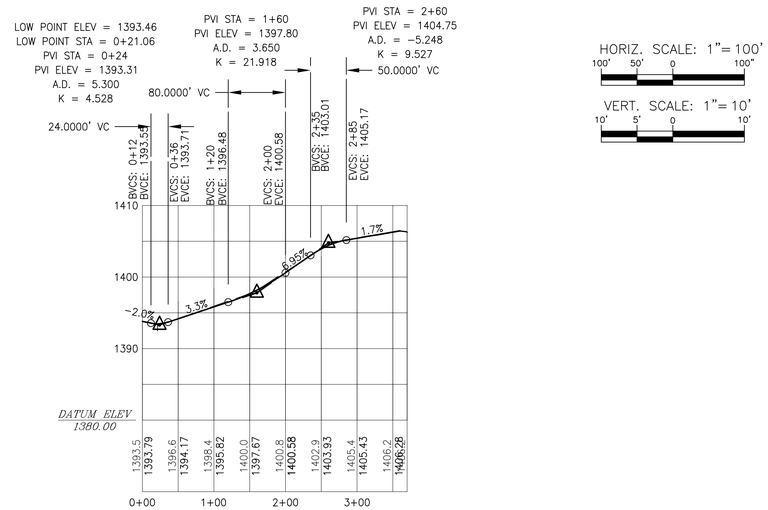
SHEET NUMBER
C300

90% NOT FOR CONSTRUCTION

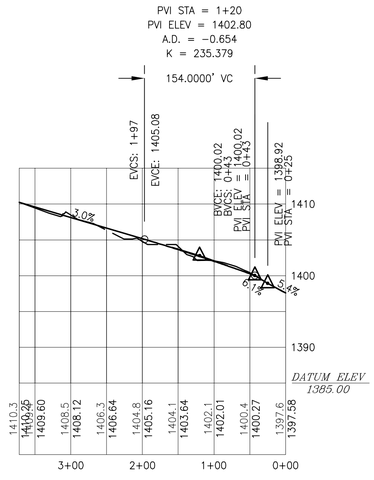
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LOWER ACCESS ROAD PROFILE STA. 0+00 TO STA. 10+40

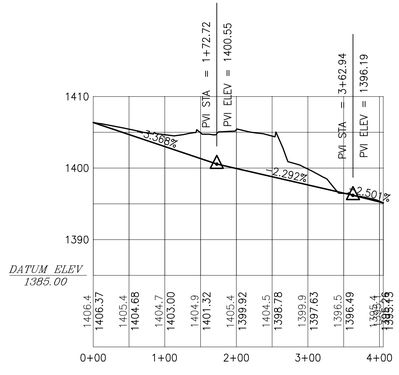


TO BE CONSTRUCTED THIS PHASE



TEMPORARY ROAD (EAST) PROFILE STA. 0+00 TO STA. 3+72.04

TO BE CONSTRUCTED THIS PHASE



TEMPORARY ROAD (WEST) PROFILE STA. 0+00 TO STA. 4+05.34

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REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
CENTERLINE PROFILE ALL SECONDARY AND TEMPORARY ROADS

SHEET NUMBER
C301

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C301.dwg Plotted on: 3/30/2010 4:59 PM Plotted by: Dixon, Lukas

GRADING NOTES

1. THE CONTOURS IN THESE PLANS REPRESENT THE ULTIMATE FINISHED GRADE ELEVATIONS AND SLOPES FOR PAVING AND TURF AREAS WITHIN THIS CONTRACT PLAN.

2. ALL FUTURE AREAS SHOWN WITHIN THIS GRADING PLAN ARE NOT WITHIN THE CURRENT CONTRACT AND ARE FOR INFORMATIONAL PURPOSE ONLY.

3. NO WETLANDS ARE TO BE DISTURBED EXCEPT THOSE AREAS CALL FOR SPECIFICALLY IN THIS PLAN SET. ENGINEER SHALL BE CALLED BEFORE WETLANDS ANY OTHER WETLANDS ARE DISTURBED FOR ANY REASON.

EROSION NOTES

1. ONCE GRADING OPERATIONS ARE COMPLETE AREAS THAT ARE SPECIFIED TO HAVE SOD INSTALLED THAT ARE WITHIN THE 200' BUFFER OF WETANDS SHALL BE INTITIALLY STABILIZED USING THE RAPID STABILIZATION METHOD #4 (SPEC 2575.3).

2. FOLLOWING THE INSTALLATION THE RAPID STABILIZATION, TOPSOIL SHALL BE SPREAD, AND THE SOD PLACED DIRECTLY FOLLWING THE TOPSOIL APPLICATION.

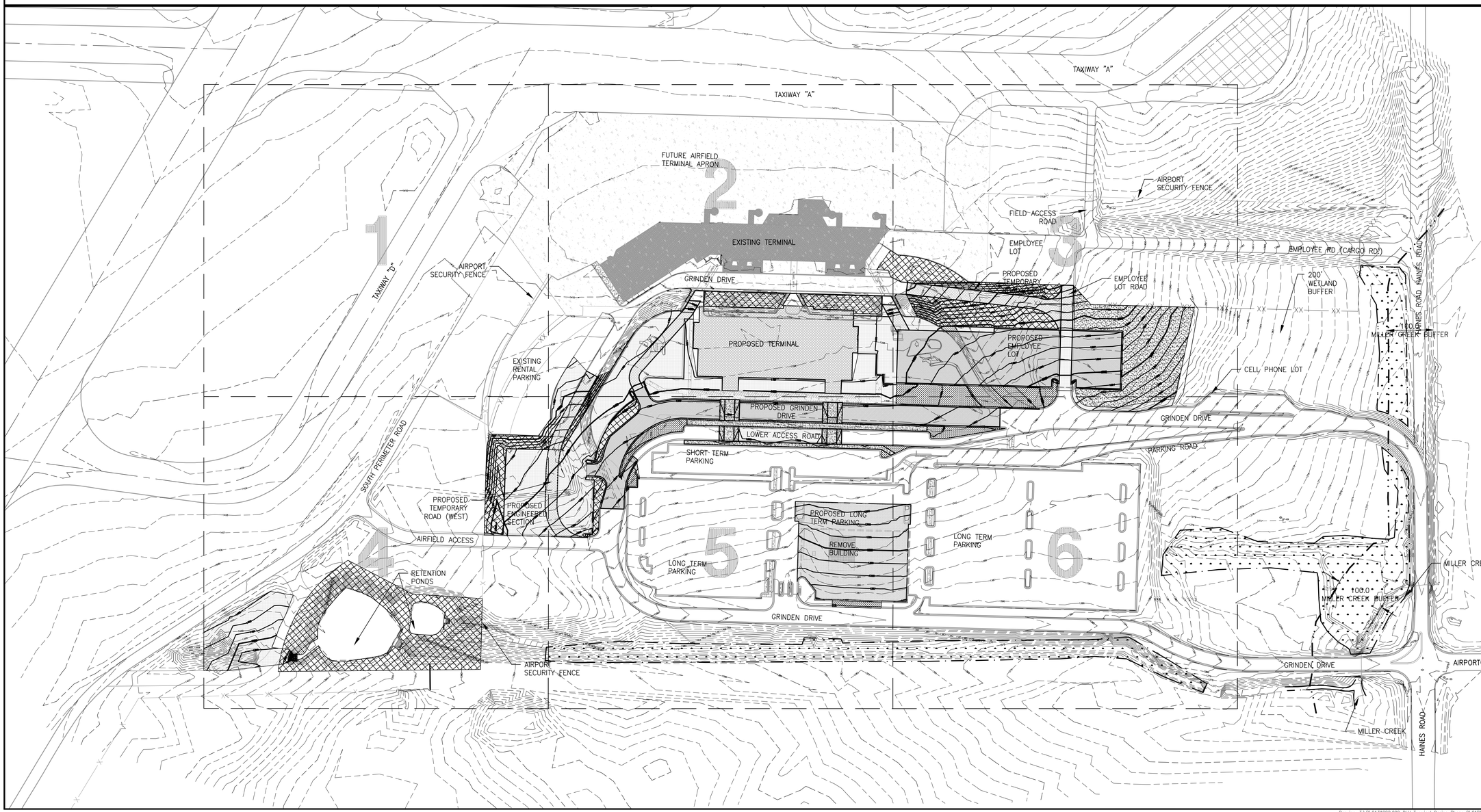
3. IF SOD CAN BE INSTALLED WITHIN THE TIME PERIOD REQUIRED BY THE MPCA, RAPID STABILIZATION UNDER THE SOD WILL NOT BE NEEDED.

LEGEND

- PROPOSED MAJOR CONTOUR (5')
- PROPOSED MINOR CONTOUR (1')
- PROPOSED GRADING LIMITS
- EXISTING MAJOR CONTOUR (5')
- EXISTING MINOR CONTOUR (1')
- PROPOSED BITUMINOUS ROAD OR PARKING
- PROPOSED GRADING AREA
- PROPOSED TERMINAL
- EXISTING TERMINAL & BUILDINGS
- FUTURE APRON (N.I.C.)
- EXISTING WETLANDS
- SF — SILT FENCE TYPE: MACHINE SLICED
- CLASS III RIP RAP W/ TYPE V FABRIC
- RAPID STABILIZATION METHOD #4 (SPEC 2575.3)
- TYPE 6 HYDRO MULCH (SPEC 5884)
- SOD

NORTH

0 100' 200'



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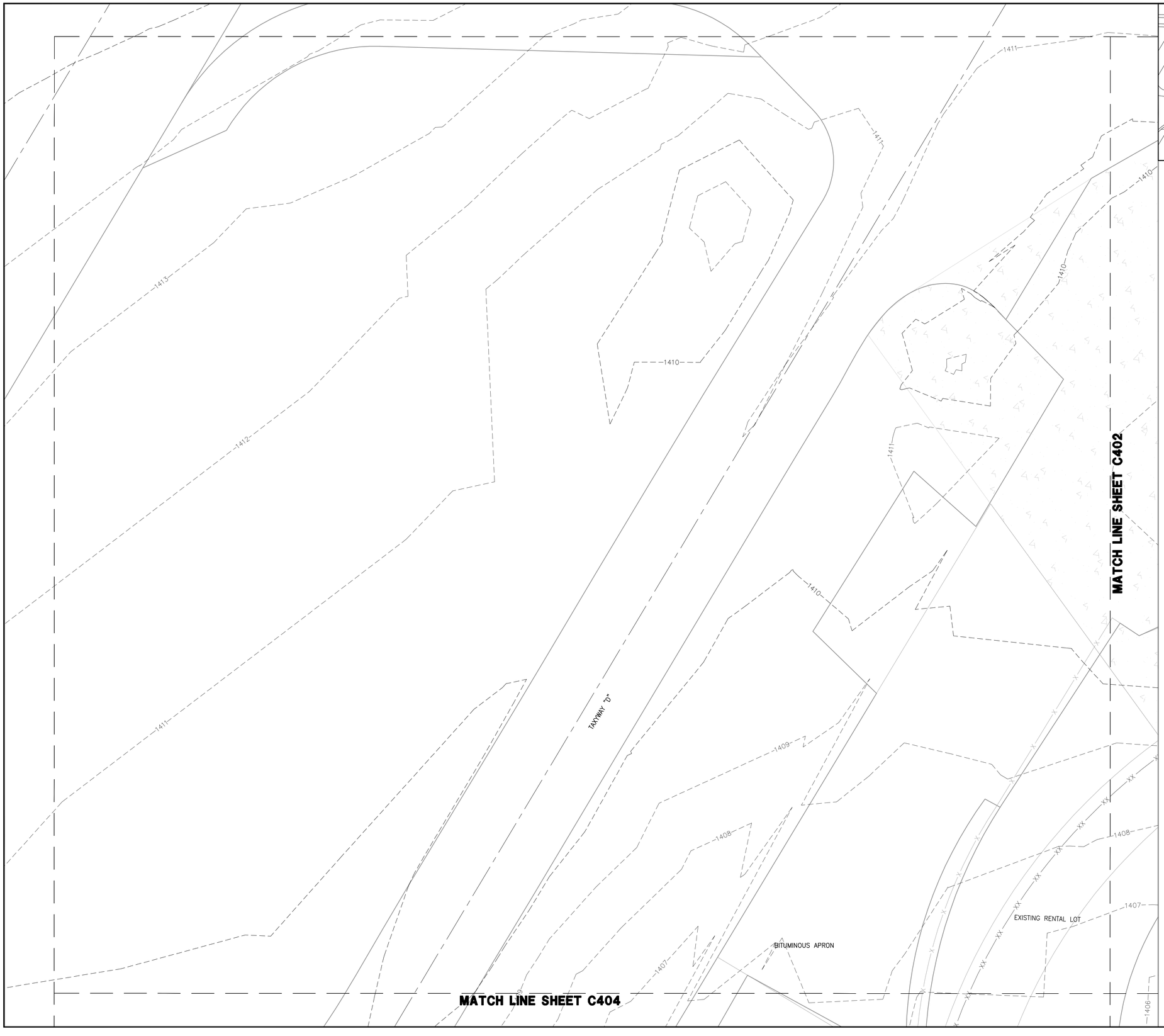
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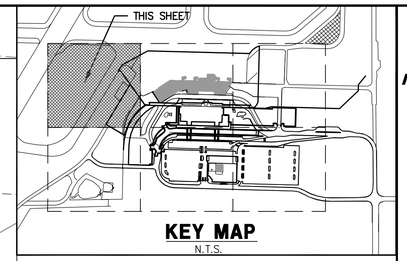
SHEET TITLE
GRADING AND EROSION CONTROL OVERALL PLAN AND NOTES

SHEET NUMBER
C400

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C400.dwg Plotted on: 3/30/2010 4:50 PM Plotted by: Dixon, Lukas





KEY MAP
N.T.S.

NORTH

0 30' 60'

GRADING AND EROSION CONTROL LEGEND

- 1270 — PROPOSED MAJOR CONTOUR (5')
- 1267 — PROPOSED MINOR CONTOUR (1')
- 1270 — EXISTING MAJOR CONTOUR (5')
- 1268 — EXISTING MINOR CONTOUR (1')
- PROPOSED GRADING LIMITS
- SF — SILT FENCE TYPE: MACHINE SLICED
- CLASS III RIP RAP W/ TYPE V FABRIC
- RAPID STABILIZATION METHOD #4 (SPEC 2575.3)
- TYPE 6 HYDRO MULCH(SPEC 5884)
- SOD

GRADING AND EROSION CONTROL NOTES

1. THE CONTOURS IN THESE PLANS REPRESENT THE ULTIMATE FINISH GRADE ELEVATION FOR PAVING AND TURF AREAS.

2. CLEARING AND GRUBBING AREAS SHALL BE GRADED TO MATCH THE SURROUNDING EXISTING GRADE AND PROVIDE POSITIVE DRAINAGE.

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Landscaping Consultants:
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TEL: (218) 591-5079

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Print Name: JOHN E. HIPPCHEN

Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: -
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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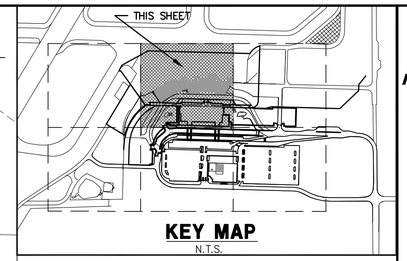
SHEET TITLE
GRADING AND EROSION CONTROL PLAN (SHEET 1 OF 6)

SHEET NUMBER
C401

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C401.dwg Plotted on: 3/30/2010 4:45 PM Plotted by: Dixon, Lukas





KEY MAP
N.T.S.

NORTH

0 30' 60'

GRADING AND EROSION CONTROL LEGEND

- 1270 — PROPOSED MAJOR CONTOUR (5')
- 1267 — PROPOSED MINOR CONTOUR (1')
- 1270 — EXISTING MAJOR CONTOUR (5')
- 1268 — EXISTING MINOR CONTOUR (1')
- PROPOSED GRADING LIMITS
- SF — SILT FENCE TYPE: MACHINE SLICED
- CLASS III RIP RAP W/ TYPE V FABRIC
- RAPID STABILIZATION METHOD #4 (SPEC 2575.3)
- TYPE 6 HYDRO MULCH(SPEC 5884)
- SOD

GRADING AND EROSION CONTROL NOTES

1. THE CONTOURS IN THESE PLANS REPRESENT THE ULTIMATE FINISH GRADE ELEVATION FOR PAVING AND TURF AREAS.

2. CLEARING AND GRUBBING AREAS SHALL BE GRADED TO MATCH THE SURROUNDING EXISTING GRADE AND PROVIDE POSITIVE DRAINAGE.

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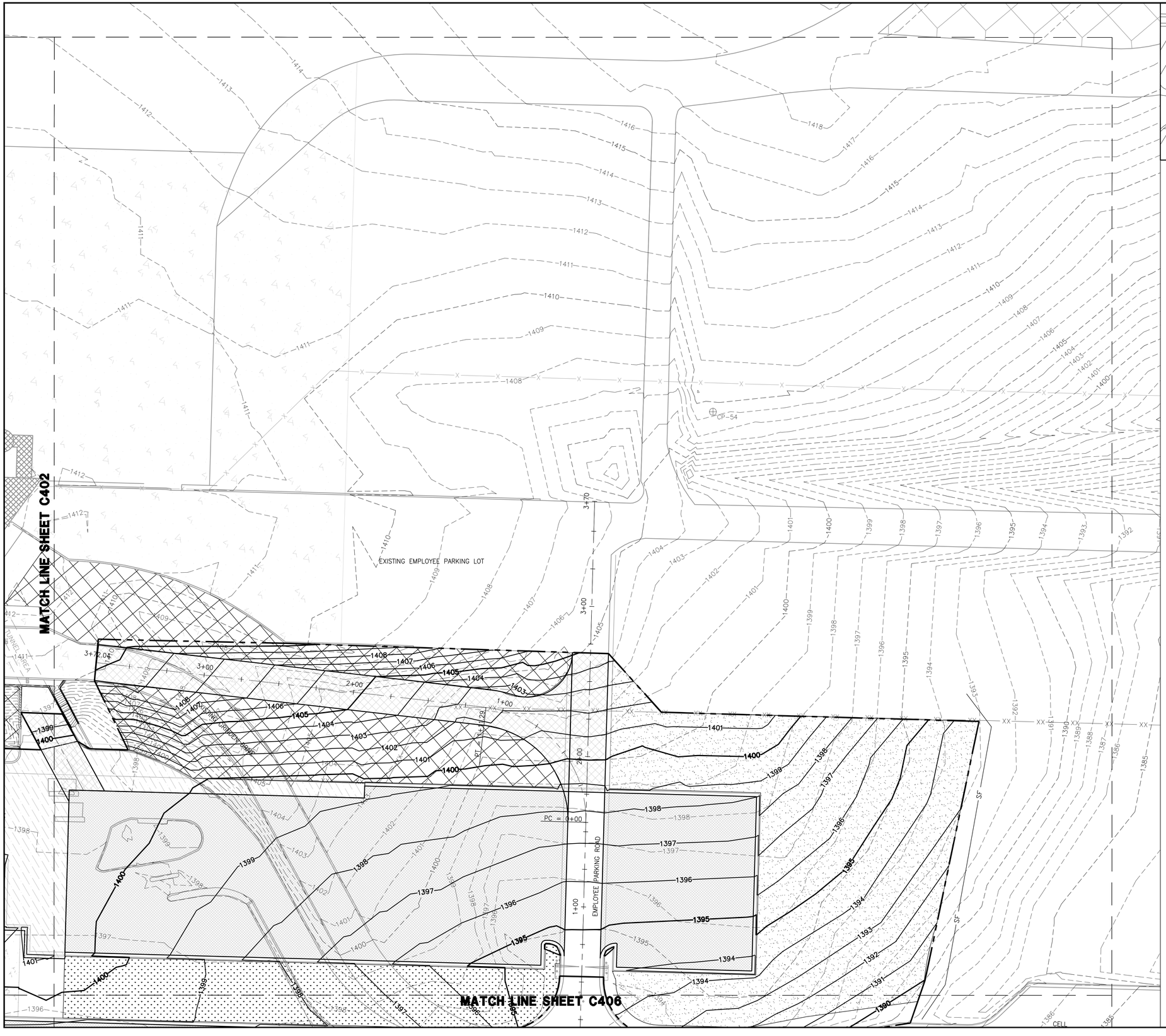
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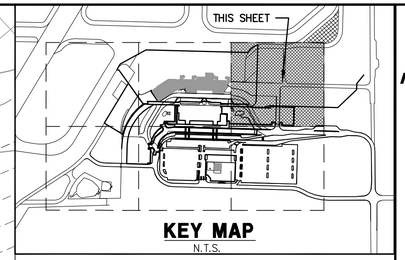
SHEET TITLE
GRADING AND EROSION CONTROL PLAN (SHEET 2 OF 6)

SHEET NUMBER
C402

90% NOT FOR CONSTRUCTION

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KEY MAP
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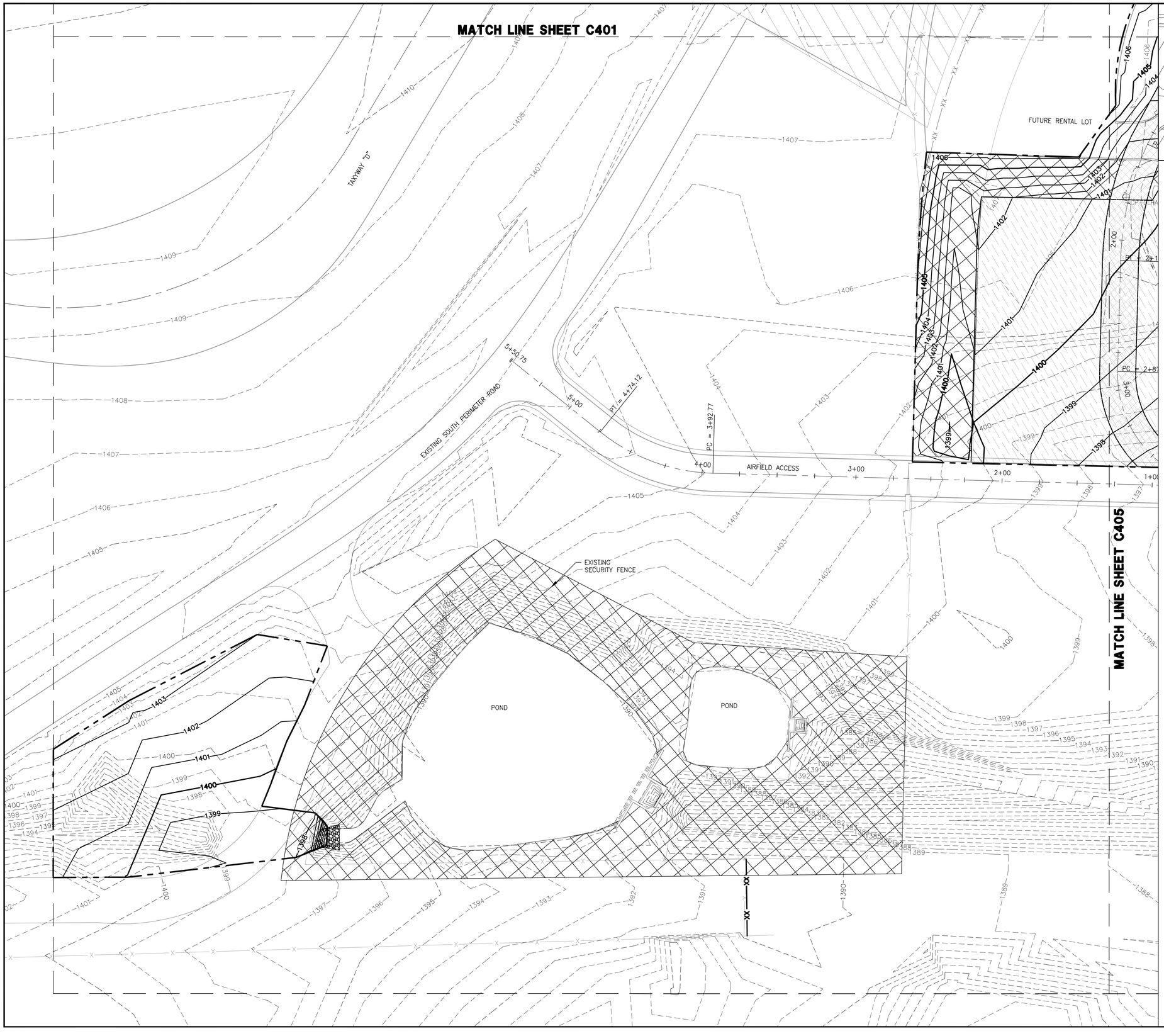
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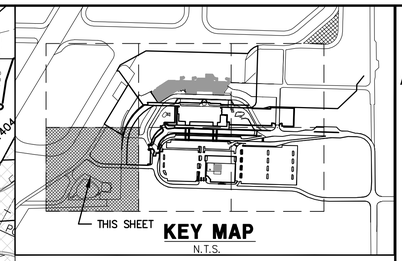
SHEET TITLE
GRADING AND EROSION CONTROL PLAN (SHEET 3 OF 6)

SHEET NUMBER
C403

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C403.dwg Plotted on: 3/30/2010 4:50 PM Plotted by: Dixon, Lukas





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0 30' 60'

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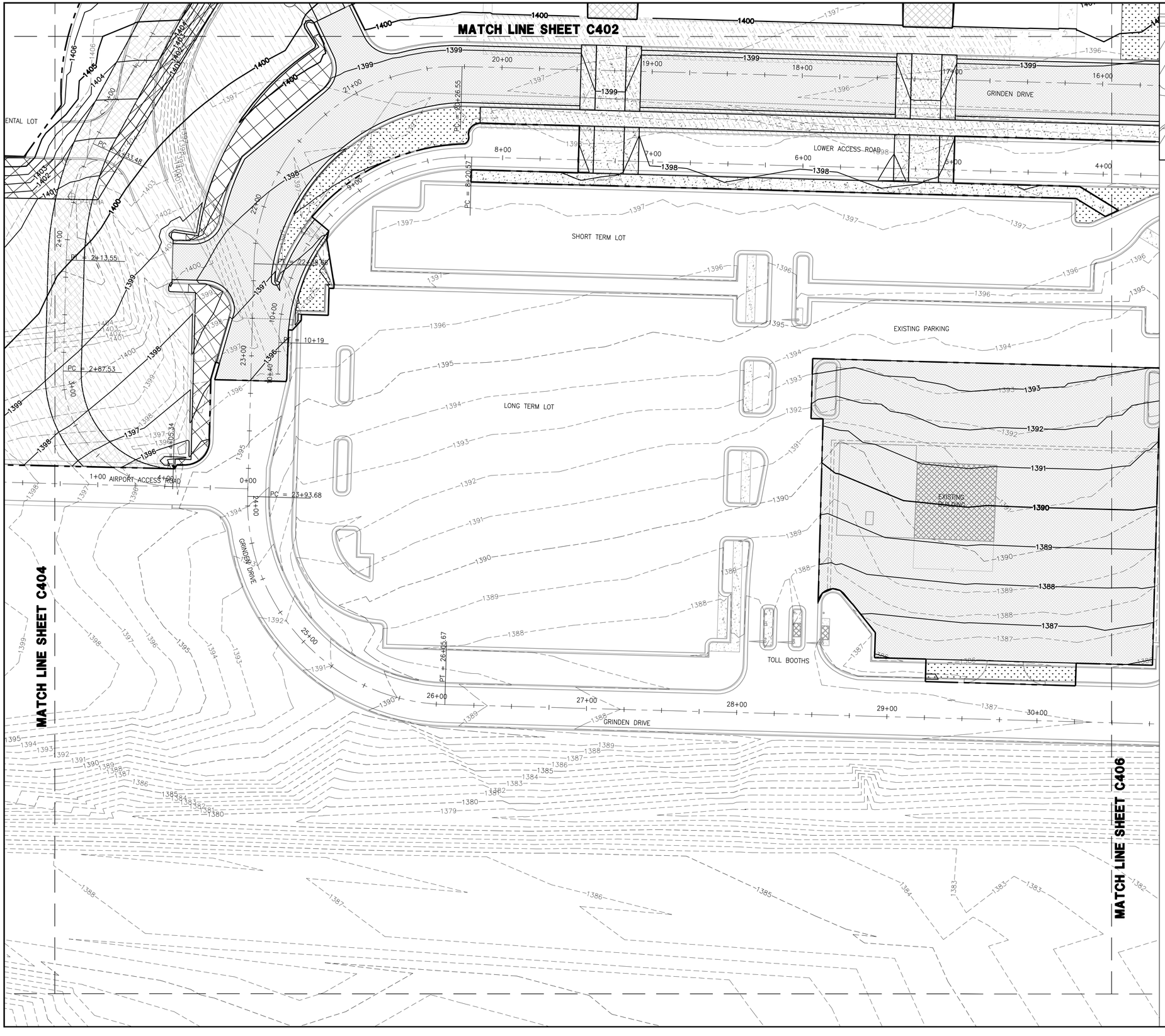
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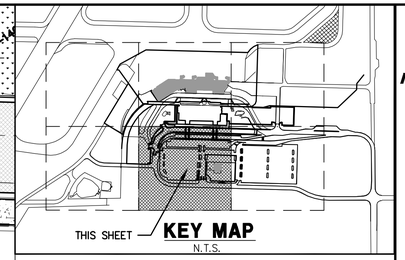
SHEET TITLE
GRADINF AND EROSION CONTROL PLAN (SHEET 4 OF 6)

SHEET NUMBER
C404

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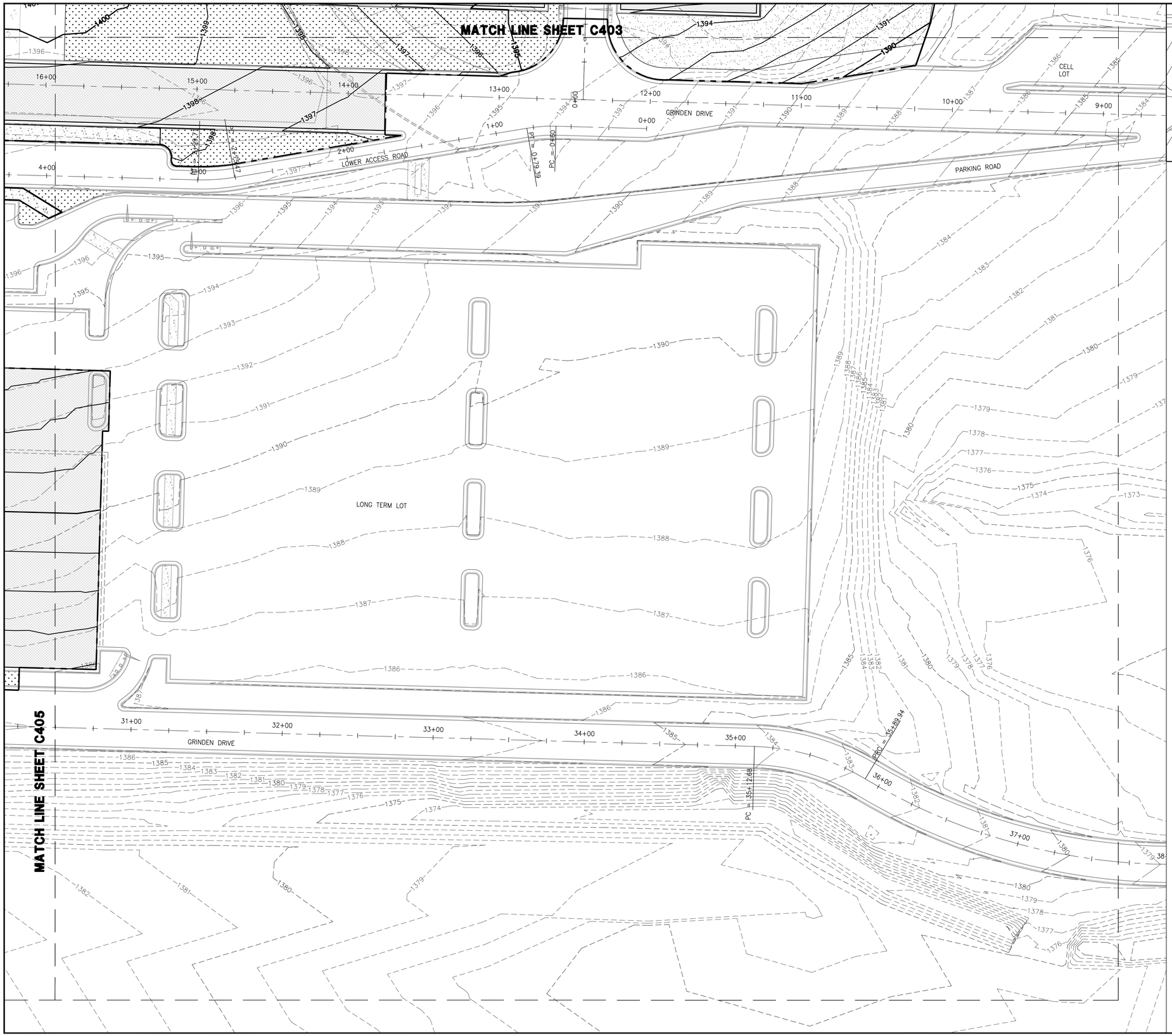
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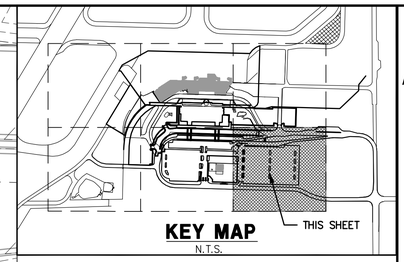
SHEET TITLE
GRADING AND EROSION CONTRAL PLAN (SHEET 5 OF 6)

SHEET NUMBER
C405

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C405.dwg Plotted on: 3/30/2010 4:54 PM Plotted by: Dixon, Lukas





KEY MAP
N.T.S.

NORTH

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SHEET TITLE
GRADING AND EROSION CONTROL PLAN (SHEET 6 OF 6)

SHEET NUMBER
C406

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C406.dwg Plotted on: 3/30/2010 4:57 PM Plotted by: Dixon, Lukas

GENERAL NOTES

1. THESE PLANS ARE PART OF THE GENERAL STORM WATER PERMIT FOR CONSTRUCTION ACTIVITY ISSUED BY THE MINNESOTA POLLUTION CONTROL AGENCY (MPCA). FAILURE TO COMPLY WITH THE CONDITIONS SET FORTH IN THESE PLANS IS A VIOLATION OF THE PERMIT.

2. SEDIMENT AND EROSION CONTROL BEST MANAGEMENT PRACTICES (BMP'S) SHALL BE CONSTRUCTED AND IMPLEMENTED IN ACCORDANCE WITH THE MPCA REFERENCE MANUAL. PROTECTING WATER QUALITY IN URBAN AREAS BEST MANAGEMENT PRACTICES FOR MINNESOTA (*MPCA MANUAL*) AVAILABLE AT: HTTP://WWW.PCA.STATE.MN.US/WATER/PUBS/SW-BMPMANUAL.HTML

SUBSEQUENT NOTES ON SPECIFIC BMP'S REFERENCE SECTION NUMBERS OF THE MPCA MANUAL.

3. SITE DISTURBANCE INCLUDES THE FOLLOWING ACREAGE:

TYPE OF AREA	EXISTING AREA	COMPLETED AREA	CHANGED AREA
IMPERVIOUS	17.88 AC	20.7 AC	2.9 AC
PERVIOUS	27.12 AC	24.2 AC	−2.9 AC
TOTAL	45.00 AC	45.0 AC	

PERMIT EXCERPTS

THE FOLLOWING SECTIONS ARE INCLUDED IN THE GENERAL REQUIREMENTS OF THE STORM WATER PERMIT FOR CONSTRUCTION ACTIVITY

PART III. STORMWATER DISCHARGE DESIGN REQUIREMENTS

D. RECORD RETENTION

THE SWPPP (ORIGINAL OR COPIES) INCLUDING, ALL CHANGES TO IT, AND INSPECTIONS AND MAINTENANCE RECORDS MUST BE KEPT AT THE SITE DURING CONSTRUCTION BY THE PERMITTEE WHO HAS OPERATIONAL CONTROL OF THAT PORTION OF THE SITE. THE SWPPP CAN BE KEPT IN EITHER THE FIELD OFFICE OR IN AN ON SITE VEHICLE DURING NORMAL WORKING HOURS.

ALL OWNER(S) MUST KEEP THE SWPPP, ALONG WITH THE FOLLOWING ADDITIONAL RECORDS, ON FILE FOR THREE (3) YEARS AFTER SUBMITTAL OF THE NOT AS OUTLINED IN PART II.C. THIS DOES NOT INCLUDE ANY RECORDS AFTER SUBMITTAL OF THE NOT.

1. ANY OTHER PERMITS REQUIRED FOR THE PROJECT;
2. RECORDS OF ALL INSPECTION AND MAINTENANCE CONDUCTED DURING CONSTRUCTION (SEE PART IV.E. INSPECTIONS AND MAINTENANCE);
3. ALL PERMANENT OPERATION AND MAINTENANCE AGREEMENTS THAT HAVE BEEN IMPLEMENTED, INCLUDING ALL RIGHT OF WAY, CONTRACTS, COVENANTS AND OTHER BINDING REQUIREMENTS REGARDING PERPETUAL MAINTENANCE; AND
4. ALL REQUIRED CALCULATIONS FOR DESIGN OF THE TEMPORARY AND PERMANENT STORMWATER MANAGEMENT SYSTEMS.

PART IV. CONSTRUCTION ACTIVITY REQUIREMENTS

B. EROSION PREVENTION PRACTICES

1. THE PERMITTEE(S) MUST PLAN FOR AND IMPLEMENT APPROPRIATE CONSTRUCTION PHASING, VEGETATIVE BUFFER STRIPS, HORIZONTAL SLOPE GRADING, AND OTHER CONSTRUCTION PRACTICES THAT MINIMIZE EROSION, SO THAT THE INSPECTION AND MAINTENANCE REQUIREMENTS OF PART IV.E. ARE COMPLIED WITH. THE LOCATION OF AREAS NOT TO BE DISTURBED MUST BE DELINEATED (E.G. WITH FLAGS, STAKES, SIGNS, SILT FENCE ETC.) ON THE DEVELOPMENT SITE BEFORE WORK BEGINS.
2. ALL EXPOSED SOIL AREAS MUST BE STABILIZED AS SOON AS POSSIBLE TO LIMIT SOIL EROSION BUT IN NO CASE LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. TEMPORARY STOCKPILES WITHOUT SIGNIFICANT SILT, CLAY OR ORGANIC COMPONENTS (E.G., CLEAN AGGREGATE STOCKPILES, DEMOLITION CONCRETE STOCKPILES, SAND STOCKPILES) AND THE CONSTRUCTED BASE COMPONENTS OF ROADS, PARKING LOTS AND SIMILAR SURFACES ARE EXEMPT FROM THIS REQUIREMENT BUT MUST COMPLY WITH PART IV.C.5.
3. THE NORMAL WETTED PERIMETER OF ANY TEMPORARY OR PERMANENT DRAINAGE DITCH OR SWALE THAT DRAINS WATER FROM ANY PORTION OF THE CONSTRUCTION SITE, OR DIVERTS WATER AROUND THE SITE, MUST BE STABILIZED WITHIN 200 LINEAL FEET FROM THE PROPERTY EDGE, OR FROM THE POINT OF DISCHARGE INTO ANY SURFACE WATER. STABILIZATION OF THE LAST 200 LINEAL FEET MUST BE COMPLETED WITHIN 24 HOURS AFTER CONNECTING TO A SURFACE WATER.

   STABILIZATION OF THE REMAINING PORTIONS OF ANY TEMPORARY OR PERMANENT DITCHES OR SWALES MUST BE COMPLETE WITHIN 14 DAYS AFTER CONNECTING TO A SURFACE WATER AND CONSTRUCTION IN THAT PORTION OF THE DITCH HAS TEMPORARILY OR PERMANENTLY CEASED.

   TEMPORARY OR PERMANENT DITCHES OR SWALES THAT ARE BEING USED AS A SEDIMENT CONTAINMENT SYSTEM (WITH PROPERLY DESIGNED ROCK DITCH CHECKS, BIO ROLLS, SILT DIKES ETC.) DO NOT NEED TO BE STABILIZED. THESE AREAS MUST BE STABILIZED WITHIN 24 HOURS AFTER NO LONGER BEING USED AS A SEDIMENT CONTAINMENT SYSTEM.
4. PIPE OUTLETS MUST BE PROVIDED WITH TEMPORARY OR PERMANENT ENERGY DISSIPATION WITHIN 24 HOURS AFTER CONNECTION TO A SURFACE WATER.

C. SEDIMENT CONTROL PRACTICES

1. SEDIMENT CONTROL PRACTICES MUST MINIMIZE SEDIMENT FROM ENTERING SURFACE WATERS, INCLUDING CURB AND GUTTER SYSTEMS AND STORM SEWER INLETS.
   a. TEMPORARY OR PERMANENT DRAINAGE DITCHES AND SEDIMENT BASINS THAT ARE DESIGNED AS PART OF A SEDIMENT CONTAINMENT SYSTEM (E.G., DITCHES WITH ROCK CHECK DAMS) REQUIRE SEDIMENT CONTROL PRACTICES ONLY AS APPROPRIATE FOR SITE CONDITIONS.
   b. IF THE DOWN GRADIENT TREATMENT SYSTEM IS OVERLOADED, ADDITIONAL UPGRADIENT SEDIMENT CONTROL PRACTICES OR REDUNDANT BMPS MUST BE INSTALLED TO ELIMINATE THE OVERLOADING, AND THE SWPPP MUST BE AMENDED TO IDENTIFY THESE ADDITIONAL PRACTICES AS REQUIRED IN PART III.A.4, A. THROUGH C.
   c. IN ORDER TO MAINTAIN SHEET FLOW AND MINIMIZE RILLS AND/OR GULLIES, THERE SHALL BE NO UNBROKEN SLOPE LENGTH OF GREATER THAN 75 FEET FOR SLOPES WITH A GRADE OF 3:1 OR STEEPER.
2. SEDIMENT CONTROL PRACTICES MUST BE ESTABLISHED ON ALL DOWN GRADIENT PERIMETERS BEFORE ANY UPGRADIENT LAND DISTURBING ACTIVITIES BEGIN. THESE PRACTICES SHALL REMAIN IN PLACE UNTIL FINAL STABILIZATION HAS BEEN ESTABLISHED IN ACCORDANCE WITH PART IV.G.
3. THE TIMING OF THE INSTALLATION OF SEDIMENT CONTROL PRACTICES MAY BE ADJUSTED TO ACCOMMODATE SHORT-TERM ACTIVITIES SUCH AS CLEARING OR GRUBBING, OR PASSAGE OF VEHICLES. ANY SHORT-TERM ACTIVITY MUST BE COMPLETED AS QUICKLY AS POSSIBLE AND THE SEDIMENT CONTROL PRACTICES MUST BE INSTALLED IMMEDIATELY AFTER THE ACTIVITY IS COMPLETED. HOWEVER, SEDIMENT CONTROL PRACTICES MUST BE INSTALLED BEFORE THE NEXT PRECIPITATION EVENT EVEN IF THE ACTIVITY IS NOT COMPLETE.
4. ALL STORM DRAIN INLETS MUST BE PROTECTED BY APPROPRIATE BMPS DURING CONSTRUCTION UNTIL ALL SOURCES WITH POTENTIAL FOR DISCHARGING TO THE INLET HAVE BEEN STABILIZED. INLET PROTECTION MAY BE REMOVED FOR A PARTICULAR INLET IF A SPECIFIC SAFETY CONCERN (STREET FLOODING/FREEZING) HAS BEEN IDENTIFIED AND THE PERMITTEE(S) HAVE RECEIVED WRITTEN CORRESPONDENCE FROM THE JURISDICTIONAL AUTHORITY (E.G. CITY/COUNTY/TOWNSHIP/MNDOT ENGINEER) VERIFYING THE NEED FOR REMOVAL. THE WRITTEN CORRESPONDENCE MUST BE DOCUMENTED IN THE SWPPP OR AVAILABLE WITHIN 72 HOURS UPON REQUEST. WHEN WRITTEN CORRESPONDENCE CAN NOT BE OBTAINED IN A TIMELY MANNER, THE SPECIFIC INLET PROTECTION CAN BE REMOVED TO ALLEVIATE THE IMMEDIATE SAFETY CONCERN. HOWEVER, EFFORTS TO OBTAIN WRITTEN CORRESPONDENCE MUST BE DOCUMENTED IN THE SWPPP AND AVAILABLE WITHIN 72 HOURS UPON REQUEST. PERMISSION TO REMOVE INLET PROTECTION BASED ON A SPECIFIC SAFETY CONCERN MUST STILL BE OBTAINED FROM THE JURISDICTIONAL AUTHORITY WITHIN 30 DAYS OF REMOVAL.
5. TEMPORARY SOIL STOCKPILES MUST HAVE SILT FENCE OR OTHER EFFECTIVE SEDIMENT CONTROLS, AND CANNOT BE PLACED IN SURFACE WATERS, INCLUDING STORMWATER CONVEYANCES SUCH AS CURB AND GUTTER SYSTEMS, OR CONDUITS AND DITCHES UNLESS THERE IS A BYPASS IN PLACE FOR THE STORMWATER.
6. VEHICLE TRACKING OF SEDIMENT FROM THE CONSTRUCTION SITE (OR ONTO STREETS WITHIN THE SITE) MUST BE MINIMIZED BY BMPS SUCH AS STONE PADS, CONCRETE OR STEEL WASH RACKS, OR EQUIVALENT SYSTEMS. STREET SWEEPING MUST BE USED IF SUCH BMPS ARE NOT ADEQUATE TO PREVENT SEDIMENT FROM BEING TRACKED ONTO THE STREET (SEE PART IV.E.4.D.).
7. THE PERMITTEE MUST INSTALL TEMPORARY SEDIMENTATION BASINS AS REQUIRED IN PART III.B. OF THIS PERMIT.

E. INSPECTIONS AND MAINTENANCE

1. THE PERMITTEE(S) (EITHER THE OWNER OR OPERATOR, WHOEVER IS IDENTIFIED IN THE SWPPP) MUST ROUTINELY INSPECT THE ENTIRE CONSTRUCTION SITE AT LEAST ONCE EVERY SEVEN (7) DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS. FOLLOWING AN INSPECTION WHICH OCCURS WITHIN 24 HOURS AFTER A RAINFALL EVENT, THE NEXT INSPECTION MUST BE CONDUCTED WITHIN SEVEN (7) DAYS AFTER THAT.
2. ALL INSPECTIONS AND MAINTENANCE CONDUCTED DURING CONSTRUCTION MUST BE RECORDED IN WRITING AND THESE RECORDS MUST BE RETAINED WITH THE SWPPP IN ACCORDANCE WITH PART III.D. RECORDS OF EACH INSPECTION AND MAINTENANCE ACTIVITY SHALL INCLUDE:
   a. DATE AND TIME OF INSPECTIONS;
   b. NAME OF PERSON(S) CONDUCTING INSPECTIONS;
   c. FINDINGS OF INSPECTIONS, INCLUDING RECOMMENDATIONS FOR CORRECTIVE ACTIONS;
   d. CORRECTIVE ACTIONS TAKEN (INCLUDING DATES, TIMES, AND PARTY COMPLETING MAINTENANCE ACTIVITIES);
   e. DATE AND AMOUNT OF ALL RAINFALL EVENTS GREATER THAN 1/2 INCH (0.5 INCHES) IN 24 HOURS;
   f. DOCUMENTATION OF CHANGES MADE TO THE SWPPP AS REQUIRED IN PART III.A.4; AND
3. WHERE PARTS OF THE CONSTRUCTION SITE HAVE PERMANENT COVER, BUT WORK REMAINS ON OTHER PARTS OF THE SITE, INSPECTIONS OF THE AREAS WITH PERMANENT COVER MAY BE REDUCED TO ONCE PER MONTH. WHERE CONSTRUCTION SITES HAVE PERMANENT COVER ON ALL EXPOSED SOIL AREAS AND NO CONSTRUCTION ACTIVITY IS OCCURRING ANYWHERE ON THE SITE, THE SITE MUST BE INSPECTED FOR A PERIOD OF TWELVE (12) MONTHS (THE INSPECTIONS MAY BE CEASED DURING FROZEN GROUND CONDITIONS). FOLLOWING THE TWELFTH MONTH OF PERMANENT COVER AND NO CONSTRUCTION ACTIVITY, INSPECTIONS MAY BE TERMINATED UNTIL CONSTRUCTION ACTIVITY IS ONCE AGAIN INITIATED OR SOONER IF NOTIFIED IN WRITING BY THE MPCA. WHERE WORK HAS BEEN SUSPENDED DUE TO FROZEN GROUND CONDITIONS, THE REQUIRED INSPECTIONS AND MAINTENANCE SCHEDULE MUST BEGIN WITHIN 24 HOURS AFTER RUNOFF OCCURS AT THE SITE OR PRIOR TO RESUMING CONSTRUCTION, WHICHEVER COMES FIRST.
4. ALL EROSION PREVENTION AND SEDIMENT CONTROL BMPS MUST BE INSPECTED TO ENSURE INTEGRITY AND EFFECTIVENESS. ALL NONFUNCTIONAL BMPS MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WITH FUNCTIONAL BMPS WITHIN 24 HOURS AFTER DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS UNLESS ANOTHER TIME FRAME IS SPECIFIED BELOW. THE PERMITTEE(S) MUST INVESTIGATE AND COMPLY WITH THE FOLLOWING INSPECTION AND MAINTENANCE REQUIREMENTS:
   a. ALL SILT FENCES MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES 1/3 OF THE HEIGHT OF THE FENCE. THESE REPAIRS MUST BE MADE WITHIN 24 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS.
   b. TEMPORARY AND PERMANENT SEDIMENTATION BASINS MUST BE DRAINED AND THE SEDIMENT REMOVED WHEN THE DEPTH OF SEDIMENT COLLECTED IN THE BASIN REACHES 1/2 THE STORAGE VOLUME. DRAINAGE AND REMOVAL MUST BE COMPLETED WITHIN 72 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS (SEE PART IV.D.).
   c. SURFACE WATERS, INCLUDING DRAINAGE DITCHES AND CONVEYANCE SYSTEMS, MUST BE INSPECTED FOR EVIDENCE OF EROSION AND SEDIMENT DEPOSITION. THE PERMITTEE(S) MUST REMOVE ALL DELTAS AND SEDIMENT DEPOSITED IN SURFACE WATERS, INCLUDING DRAINAGE WAYS, CATCH BASINS, AND OTHER DRAINAGE SYSTEMS, AND RESTABILIZE THE AREAS WHERE SEDIMENT REMOVAL RESULTS IN EXPOSED SOIL. THE REMOVAL AND STABILIZATION MUST TAKE PLACE WITHIN SEVEN (7) DAYS OF DISCOVERY UNLESS PRECLUDED BY LEGAL, REGULATORY, OR PHYSICAL ACCESS CONSTRAINTS. THE PERMITTEE SHALL USE ALL REASONABLE EFFORTS TO OBTAIN ACCESS. IF PRECLUDED, REMOVAL AND STABILIZATION MUST TAKE PLACE WITHIN SEVEN (7) CALENDAR DAYS OF OBTAINING ACCESS. THE PERMITTEE IS RESPONSIBLE FOR CONTACTING ALL LOCAL, REGIONAL, STATE AND FEDERAL AUTHORITIES AND RECEIVING ANY APPLICABLE PERMITS, PRIOR TO CONDUCTING ANY WORK.
   d. CONSTRUCTION SITE VEHICLE EXIT LOCATIONS MUST BE INSPECTED FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING ONTO PAVED SURFACES. TRACKED SEDIMENT MUST BE REMOVED FROM ALL PAVED SURFACES, WITHIN 24 HOURS OF DISCOVERY, OR IF APPLICABLE, WITHIN A SHORTER TIME TO COMPLY WITH PART IV.C.6.
   e. THE PERMITTEE(S) ARE RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF TEMPORARY AND PERMANENT WATER QUALITY MANAGEMENT BMPS, AS WELL AS ALL EROSION PREVENTION AND SEDIMENT CONTROL BMPS, FOR THE DURATION OF THE CONSTRUCTION WORK AT THE SITE. THE PERMITTEE(S) ARE RESPONSIBLE UNTIL ANOTHER PERMITTEE HAS ASSUMED CONTROL ACCORDING TO PART II.B.5 OVER ALL AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED OR THE SITE HAS UNDERGONE FINAL STABILIZATION, AND A NOT HAS BEEN SUBMITTED TO THE MPCA.
   f. IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED IN A MANNER AND AT A FREQUENCY SUFFICIENT TO MINIMIZE OFF-SITE IMPACTS (E.G., FUGITIVE SEDIMENT IN STREETS COULD BE WASHED INTO STORM SEWERS BY THE NEXT RAIN AND/OR POSE A SAFETY HAZARD TO USERS OF PUBLIC STREETS).
5. ALL INFILTRATION AREAS MUST BE INSPECTED TO ENSURE THAT NO SEDIMENT FROM ONGOING CONSTRUCTION ACTIVITY IS REACHING THE INFILTRATION AREA AND THESE AREAS ARE PROTECTED FROM COMPACTION DUE TO CONSTRUCTION EQUIPMENT DRIVING ACROSS THE INFILTRATION AREA.

TEMPORARY EROSION & SEDIMENT CONTROL NOTES

1. INSTALLATION OF TEMPORARY EROSION AND SEDIMENT CONTROL PRACTICES SHALL OBSERVE THE FOLLOWING SEQUENCE WITHIN ANY OF THE DRAINAGE BASINS SHOWN ON THE "TEMPORARY EROSION AND SEDIMENT CONTROL PLAN".
   A. STAKE LOCATION OF SEDIMENT TRAP(S) AND CONSTRUCTION LIMITS DELINEATING THE EDGE OF LAND DISTURBANCE.
   B. INSTALL SILT FENCE AROUND THE ENTIRE SITE PERIMETER AS SHOWN ON THE PLANS.
   C. CONSTRUCT SEDIMENT TRAP.
   D. CONSTRUCT ALL DIVERSION DITCHES AND PERMANENT DIVERSIONS.
   E. EXCAVATE WITHIN TRIBUTARY AREA.
   F. AS EMBANKMENT ALTERS THE EXISTING SITE TOPOGRAPHY, PERIODICALLY RELOCATE THE DIVERSION DITCHES TO FACILITATE DRAINAGE TO THE SEDIMENT TRAP.
2. CHANGES TO THE ABOVE DESCRIBED SEQUENCE OR TO THE CONSTRUCTION SEQUENCE FURNISHED BY THE CONTRACTOR ARE ALLOWED PROVIDED THAT PERMIT SECTIONS 1.D AND 1.E AND APPENDIX C.F.4 ARE COMPLIED WITH.
3. SILT FENCE SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 6.3 OF THE MPCA MANUAL.
4. CONSTRUCTION OF DIVERSION DITCHES AND PERMANENT DIVERSIONS SHALL COMPLY WITH SECTION 5.9 OF THE MPCA REFERENCE MANUAL. DITCHES ARE CONSTRUCTED TO DIVERT RUNOFF TO SEDIMENT TRAPS.

   PERMANENT DIVERSIONS ARE DIVESION DITCHES CONSTRUCTED PER THE ABOVE DETAIL AND ARE INTENDED TO REMAIN IN PLACE THROUGH THE LIFE OF THE CONSTRUCTION PROJECT. THE CONTRACTOR SHALL PROVIDE PERIODIC MAINTENANCE TO ASSURE THAT THE PERMANENT DIVERSION IS FUNCTIONAL.

   DIVERSION DITCHES ARE TEMPORARY DITCHES CONSTRUCTED PER THE ABOVE DETAIL AND ARE INTENDED TO REMAIN IN PLACE ONLY AS LONG AS CUT/FILL OPERATIONS PERMIT. IT IS EXPECTED THAT THE CONTRACTOR WILL HAVE TO REGULARLY RELOCATE DIVERSION DITCHES AS CONSTRUCTION PROGRESSES.

   THE LOCATION OF THE PERMANENT DIVERSIONS AND DIVERSION DITCHES SHOWN ON THE PLANS IS APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING THE DIVERSION DITCHES TO INTERCEPT AND CONVEY RUNOFF FROM THE SITE TO THE SEDIMENT TRAPS.
5. TEMPORARY SEEDING SHALL COMPLY WITH MPCA REFERENCE MANUAL SECTION 6.20 AND INCLUDE THE FOLLOWING:
   - SEED MIXTURE OF OATS (APPLIED AT 3 BUSHELS PER ACRE) AND CEREAL RYE (APPLIED AT 1.5 BUSHELS PER ACRE)
   - FERTILIZER (10−20−20) APPLIED AT 450 LBS PER ACRE
   - 1/2" TO 1−1/2" DEPTH OF PLANTING

PERMANENT EROSION & SEDIMENT CONTROL NOTES

1. PERMANENT SEEDING AND MULCHING SHALL COMPLY WITH MPCA REFERENCE MANUAL SECTION 6.21 AND 6.22 RESPECTIVELY, AND SHALL INCLUDE THE FOLLOWING:
   - SEED MIXTURE 250 APPLIED AT 125 LBS PER ACRE
   - FERTILIZER − MNDOT TYPE 1 (10−10−10)
   - TYPE 6 MULCH APPLIED AT 2100 LBS PER ACRE, OR CATEGORY 2 EROSION MAT, OR CATEGORY 3 EROSION MAT. (SEEP PLANS FOR LOCATIONS)
2. SODDING SHALL COMPLY WITH SECTION 6.22 OF THE MPCA REFERENCE MANUAL.
3. ALL AREAS WITHIN THE BOUNDARIES OF LAND DISTURBING ACTIVITIES SHALL BE STABILIZED IN ACCORDANCE WITH THE LEGEND ON SHEETS C400−C408.

CITY OF DULUTH, MN. EROSION CONTROL NOTES REV JANUARY 2009

1. MNDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION (2005 EDITION) SHALL APPLY. ALONG WITH THE DULUTH AIRPORT AUTHORITY, THE CONTRACTOR WILL BE CO−PERMITEE FOR THE MPCA NPDES STORM WATER CONSTRUCTION PERMIT FOR THIS PROJECT − CONTRACTORS SIGNATURE ON PERMIT IS REQUIRED.
   1.1. SUBMIT INITIAL EROSION CONTROL (EC) SCHEDULE AT OR BEFORE THE PRECONSTRUCTION CONFERENCE.
   1.2. SUBMIT EC SCHEDULE ALTERATIONS/ADJUSTMENTS WEEKLY THEREAFTER FOR ENGINEER'S APPROVAL.
2. THE CONTRACTOR IS RESPONSIBLE FOR EROSION CONTROL QUALITY CONTROL (WC) ON THIS PROJECT. CONTRACTOR SHALL PHASE/SEQUENCE THE PROJECT TO MINIMIZE EXPOSURE TO EROSION. CONTRACTOR SHALL PLACE OR OTHERWISE CONSTRUCT EROSION CONTROL AND SEDIMENT CONTAINMENT DEVICES TO MINIMIZE THE RUNOFF, TRACKING, AND SEDIMENT LOSS FROM DISTURBED AREAS OF THE PROJECT SITE.
3. DISTURBED SLOPES NOT ACTIVELY WORKED SHALL BE PROTECTED FROM SOIL EROSION WITH TEMPORARY OR PERMANENT COVER WITHIN 3 DAYS OF BEING WORKED. EROSION CONTROL BLANKET AND SOIL STAPLES SHALL BE USED.
4. AT MINIMUM, THE FOLLOWING CONTROLS WILL BE IMPLEMENTED AT THE CONSTRUCTION SITE:
   4.1. EROSION CONTROL BLANKETS SHALL BE USED ON ALL SLOPES 1:3 OR STEEPER
   4.2. SILT FENCES SHALL BE USED IN CONJUNCTION WITH OTHER EROSION BMPS
   4.3. ROCK DITCH CHECKS OR APPROVED EQUAL ARE TO BE USED TO REDUCE DITCH VELOCITIES AND REDUCE EROSION
   4.4. STORM INLET AND OUTLET AREAS SHALL BE CONTINUOUSLY PROTECTED WITH MNDOT APPROVED DEVICES/METHODS
   4.5. STABILIZED CONSTRUCTION ENTRANCE, OR REUSABLE MUD MAT SHALL BE USED TO REDUCE SEDIMENT TRACKING
   4.6. PERMANENT VEGETATION WILL BE ESTABLISHED RIGHT AFTER TOPSOIL IS SPREAD
   4.7. CONTROL ALL SITE SOLID WASTE, DEBRIS, MATERIAL STORAGE AND CONCRETE WASHOUT ON SITE. NO MIGRATION OFFSITE OR INTO DITCHES/STORM SYSTEMS PERMITTED
5. ALL SLOPES AND DITCHES SHALL BE STABILIZED PRIOR TO OPENING NEW CULVERTS INTO EXISTING DRAINAGE WAYS.
6. IF ANY STOCKPILE IS TO REMAIN IN PLACE FOR MORE THAN 3 DAYS SEDIMENT AND EROSION CONTROL DEVICES SHALL BE USED.
7. WATER PUMPED OR OTHERWISE DISCHARGED FROM THE SITE DURING CONSTRUCTION DEWATERING SHALL BE DIRECTED THROUGH EFFECTIVE FILTERING DEVICE(S) IN ACCORDANCE WITH MNDOT SPECIFICATION 2573. USE OF APPROVED FLOCCULANT MAY BE NECESSARY.
8. THE CONTRACTOR SHALL TAKE ALL POSSIBLE PRECAUTIONS TO PREVENT APPRECIABLE SOIL TRACKING ONTO ROADWAYS. APPRECIABLE SOIL, MUD, OR DEBRIS WASHED, TRACKED, OR DEPOSITED ONTO PAVED SURFACES SHALL BE REMOVED PRIOR TO THE END OF EACH WORK DAY.
9. STABILIZED CONSTRUCTION ENTRANCE(S) SHALL BE REMOVED AND AREA RESTORED AFTER GRADING IS COMPLETE.
10. THE CONTRACTOR QC PROGRAM SHALL ENSURE THAT A COMPETENT INDIVIDUAL SHALL INSPECT EROSION AND SEDIMENT CONTROL DEVICES WEEKLY AND AFTER EACH RAIN EVENT. ALL NONFUNCTIONAL DEVICES SHALL BE REPAIRED/REPLACED/CLEANED. MAINTAIN WRITTEN LOG OF ALL WEEKLY AND RAIN EVENT INSPECTIONS − INCLUDE THE CORRECTIVE ACTIONS THAT WERE TAKEN.
11. THE CONTRACTOR SHALL MAINTAIN THE CAPABILITY TO IMPLEMENT RAPID STABILIZATION METHOD 4 (MNDOT 2573.4) AT ALL TIMES. INCLUDES CAT III EROSION CONTROL BLANKED (ECB) [N. AMERICAN GREEN S150 OR APPROVED EQUAL] ALONG WITH SEED MIXTURE, FERTILIZER, AND SOIL STAPLES PER 2573−3. THE UPGRADE END OF EACH BLANKET STRIP SHALL BE BURIED AT LEAST 6 INCHES IN A VERTICAL CHECK SLOT. STAPLES SHALL BE PLACED AT SEAMS AND THROUGHOUT THE BLANKET AT A MAXIMUM SPACING IN ALL DIRECTIONS OF 2 FEET. PAYMENT ALLOWED SHALL BE PER CONTRACT OR IN ABSENCE OF CONTRACT BID PRICE IN ACCORDANCE WITH MNDOT SPECIFICATION 2575.5

CONSTRUCTION PRACTICES TO MINIMIZE STORM WATER CONTAMINATION

TO PREVENT STORM WATER CONTAMINATION FROM OCCURRING, THE FOLLOWING BMPS WILL BE IMPLEMENTED:
1. ALL AREAS THAT ARE ROUGH GRADED MUST BE KEPT IN A SMOOTH CONDITION TO ALLOW SHEET FLOW OF STORM WATER WHEREVER PRACTICAL AND ALWAYS READY FOR SURFACE APPLICATION OF DEGRADABLE OR NON−DEGRADABLE BLANKETS, MULCH, OR OTHER PROTECTIVE COVERS.
2. A STABILIZED CONSTRUCTION ENTRANCE/EXIT WILL BE CONSTRUCTED TO REDUCE VEHICLE TRACKING OF SEDIMENTS OFF THE PROJECT RIGHT OF WAY.
3. ALL SOLID WASTE MATERIALS WILL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER OR OTHER APPROVED CONTAINMENT METHOD AT THE END OF EACH DAY. ANY ALTERNATIVE TO A METAL DUMPSTER MUST BE SUBMITTED IN WRITING FOR APPROVAL BY THE PROJECT ENGINEER. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER WILL BE EMPTIED AS NECESSARY TO FUNCTION AS INTENDED FOR DEBRIS COLLECTION. NO CONSTRUCTION MATERIALS WILL BE BURIED ON−SITE. THE CONTRACTOR'S EROSION CONTROL SUPERVISOR WILL INSTRUCT ALL PERSONNEL REGARDING THE CORRECT PROCEDURE FOR DISPOSAL.
4. RECYCLABLE MATERIALS MUST BE SEPARATED ON−SITE AND SEGREGATED IN DESIGNATED CONTAINERS.
5. A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR WILL COLLECT ALL SANITARY WASTE FROM THE PORTABLE UNITS AT A RATE NECESSARY TO MAINTAIN DESIGNED FUNCTION.
6. ALL VEHICLES ON SITE WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE.
7. FERTILIZERS WILL BE STORED IN A COVERED SHED AND PARTIALLY USED BAGS WILL BE TRANSFERRED TO A SEALABLE BIN TO REDUCE THE CHANCE OF SPILLAGE.
8. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS, WHICH ARE CLEARLY LABELED.
9. SPILL KITS WILL BE INCLUDED WITH ALL FUELING SOURCES AND MAINTENANCE ACTIVITIES. SECONDARY CONTAINMENT MEASURES WILL BE INSTALLED AND MAINTAINED BY THE CONTRACTOR.
10. ANY ASPHALT SUBSTANCES USED ON SITE WILL BE APPLIED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
11. ALL PAINT CONTAINERS AND CURING COMPOUNDS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM WATER SYSTEM BUT WILL BE PROPERLY DISPOSED OF ACCORDING TO MANUFACTURER'S INSTRUCTION.
12. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEAN−UP SHALL BE READILY AVAILABLE AND BE KEPT IN AN ENCLOSED TRAILER OR SHED ON SITE. EQUIPMENT WILL INCLUDE, BUT NOT LIMITED TO, BROOMS, MOPS, DUST PANS, RAGS, GLOVES, GOGGLES, ABSORBENT (KITTY LITTER, OIL ABSORBENT BOOMS AND DIAPERS) AND BUCKETS.
13. ALL SPILLS WILL BE CONTAINED AND CLEANED UP IMMEDIATELY UPON DISCOVERY. SPILLS LARGE ENOUGH TO REACH THE STORM WATER CONVEYANCE SYSTEM WILL BE REPORTED TO THE MINNESOTA DUTY OFFICER AT 1−800−422−0798.
14. CONCRETE TRUCKS WILL NOT BE ALLOWED TO WASH OUT OR DISCHARGE SURPLUS CONCRETE OR DRUM WASH WATER ON THE SITE UNLESS DONE IN AN ENGINEERED CONTAINMENT SYSTEM. THE ENGINEERED SYSTEM MUST INCLUDE SITE DRAWINGS FOR THE PROJECT FILE AND WRITTEN ASSURANCE THAT THE SYSTEM WILL WORK AS DESIGNED AND LEAVE NO DISCHARGE OF CONCRETE OR CONCRETE RESIDUE POTENTIAL TO ENTER WATERS OF THE STATE.
15. FORM RELEASE OIL USED FOR CONCRETE WORK MUST BE APPLIED OVER A PALLET CONTAINING ABSORBENT TO COLLECT EXCESS LIQUID. THE ABSORBENT MATERIAL WILL BE REPLACED AND PROPERLY DISPOSED OF WHEN SATURATED.
16. DISCHARGES FROM BASIN DEWATERING OPERATIONS THAT ARE TURBID OR SEDIMENT LADEN SHALL BE DISCHARGED TO TEMPORARY SEDIMENT BASINS CONSTRUCTED ON THE SITE TO PROVIDE TREATMENT PRIOR TO DISCHARGE TO A WATER OF THE STATE.

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2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: JOHN E. HIPPCHEN

Signature: John E Hippchen

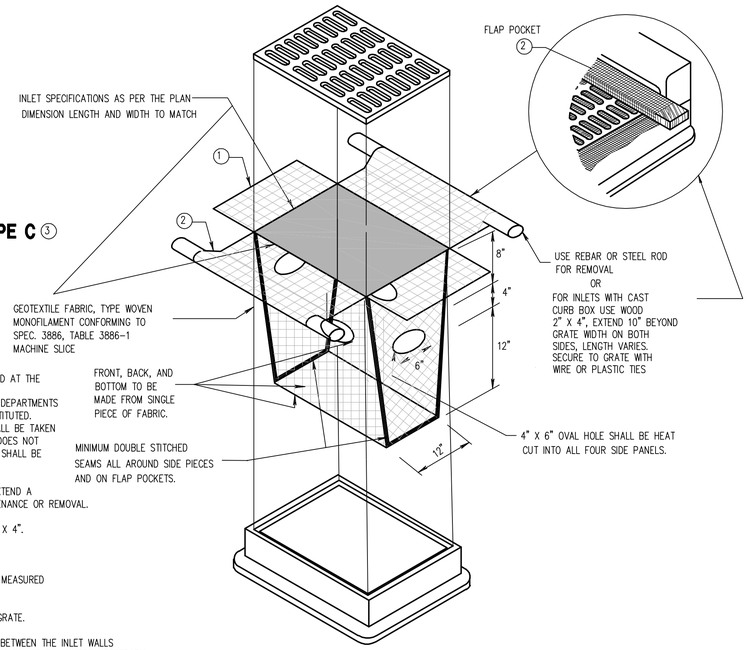
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**REVISI

INLET PROTECTION, TYPE C ③

DETAIL

(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX)



NOTES:

- –INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE ENGINEER.
- –MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENTS EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED.
- –WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

① FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

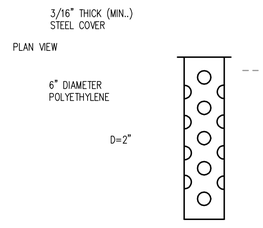
② FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2" X 4".

③ INSTALLATION NOTES:

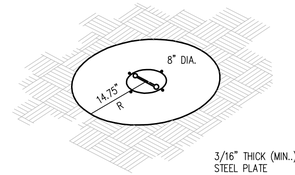
DO NOT INSTALL PROTECTION IN INLETS SHALLOWER THAN 30", MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

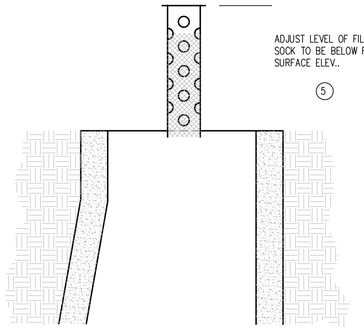
THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CLINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE BOTTOM OF THE BAG.



TUBE RISER

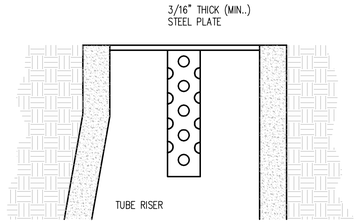


PERSPECTIVE VIEW



SECTION

(UP POSITION)



SECTION

(DOWN POSITION)

WIMCO EROSION BARRIER POP-UP HEAD

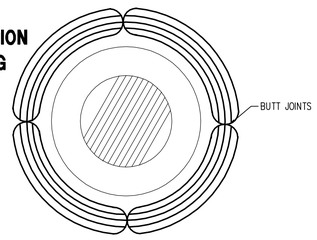
PAYMENT SHALL INCLUDE ALL MATERIALS, FILLING OF LOG,PLACEMENT, MAINTENANCE, & REMOVAL. 80% OF BID PRICE SHALL BE PAID UPON PROPER PLACEMENT WITH THE FINAL 20% PAID UPON REMOVAL.

FILL ROCK LOG WITH 45 LBS. OF OPEN GRADED AGGREGATE CONSISTING OF SOUND, DURABLE PARTICLES OF CRUSHED QUARRY ROCK OR GRAVEL CONFORMING TO THE FOLLOWING GRADATION.

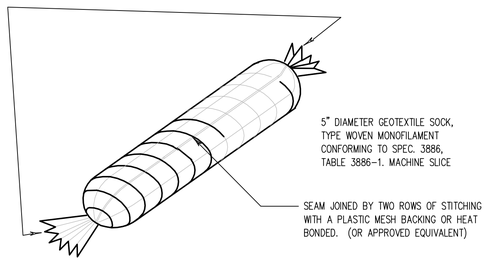
GRADATION	
SIEVE SIZE	PERCENT PASSING
11/2 INCH	100
1 INCH	95–100
3/4 INCH	65–95
3/8 INCH	30–65
NO. 4	10–35
NO.10	3–20
NO. 40	0–8
NO. 200	0–3

NOTE: CRUSHED CONCRETE OR BITUMINOUS SHALL NOT BE USED FOR OPEN GRADED AGGREGATE.

INLET PROTECTION WITH ROCK LOG



ENDS SECURELY CLOSED TO PREVENT LOSS OF OPEN GRADED AGGREGATE FILL. SECURED WITH 50 PSI. ZIP TIE.



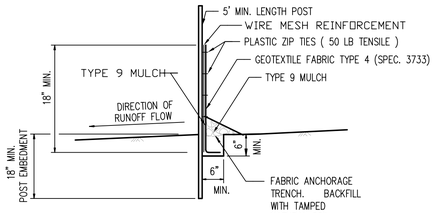
TEMPORARY DITCH CHECK, TYPE ROCK LOG DETAIL

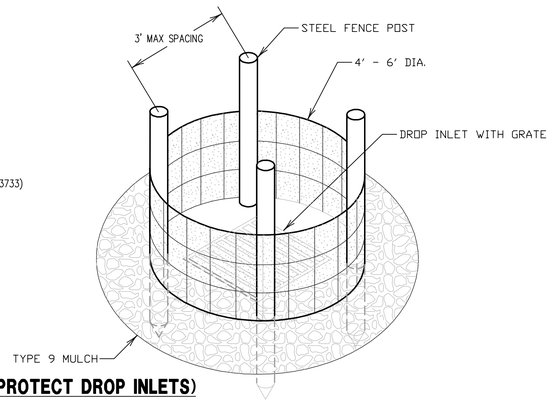
NOTES:

THE SEDIMENT CONTROL BARRIER SHALL BE A METAL OR PLASTIC/POLYETHELENE RISER SIZED TO FIT INSIDE THE CATCH BASIN/MANHOLE; HAVE PERFORATIONS TO ALLOW FOR WATER INFILTRATION; HAVE AN OVERFLOW OPENING, FLANGES AND A LID/COVER.

① USE INLET PROTECTION TYPE A OR TYPE 9 MULCH, AS DIRECTED BY THE ENGINEER.

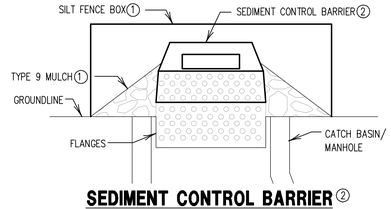
② PAID FOR AS SEDIMENT CONTROL BARRIER.





INLET PROTECTION TYPE A (SILT FENCE TO PROTECT DROP INLETS)

USE WHERE INLET DRAINS AN AREA WITH SLOPES AT 1:3 or LESS (TYPE A SPEC. 3891)



SEDIMENT CONTROL BARRIER ②

NOTES:

- –INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE ENGINEER.
- –MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENTS EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED.
- –WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

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Signature:

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: -
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

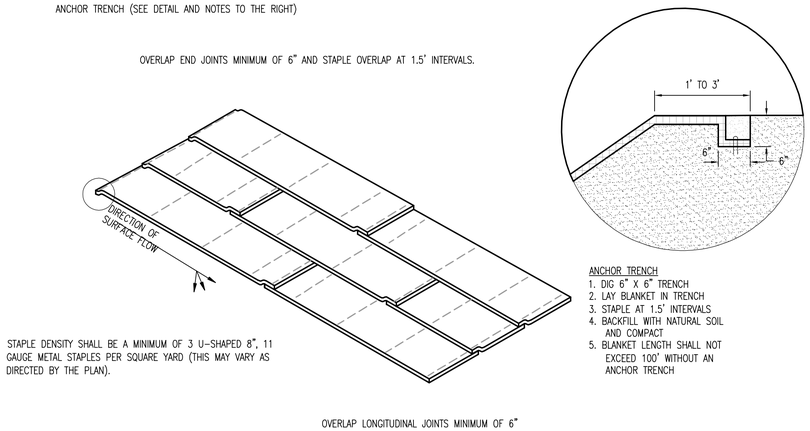
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SHEET TITLE
EROSION, AND SEDIMENTATION CONTROL NOTES AND DETAILS (SHEET 2 OF 4)

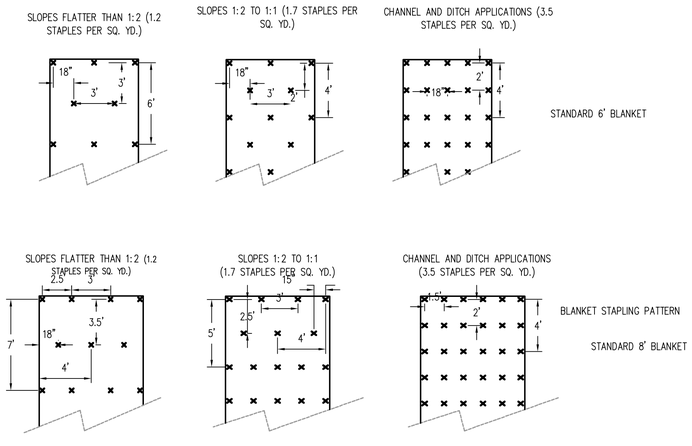
SHEET NUMBER
C408

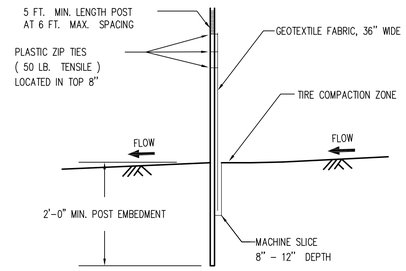
90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C408.dwg Plotted on: 3/30/2010 5:04 PM Plotted by: Dixon, Lukas



EROSION BLANKET INSTALLATION

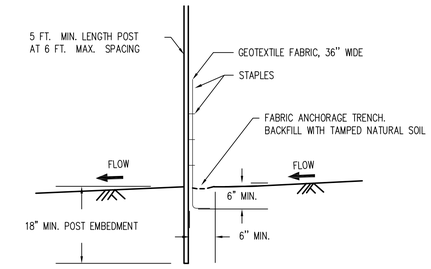




SILT FENCE, MACHINE SLICED

DESIGN GUIDELINES:

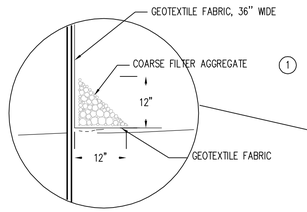
TO PROTECT AREAS FROM SHEET FLOW.
MAXIMUM CONTRIBUTING AREA: 1 ACRE.



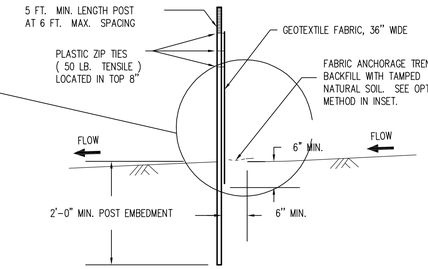
SILT FENCE, PREASSEMBLED

DESIGN GUIDELINES:

TO PROTECT AREAS FROM SHEET FLOW.
MAXIMUM CONTRIBUTING AREA: 1 ACRE.



OPTIONAL METHOD FOR SILT FENCE, HEAVY DUTY



SILT FENCE, HEAVY DUTY

(HAND INSTALLED)

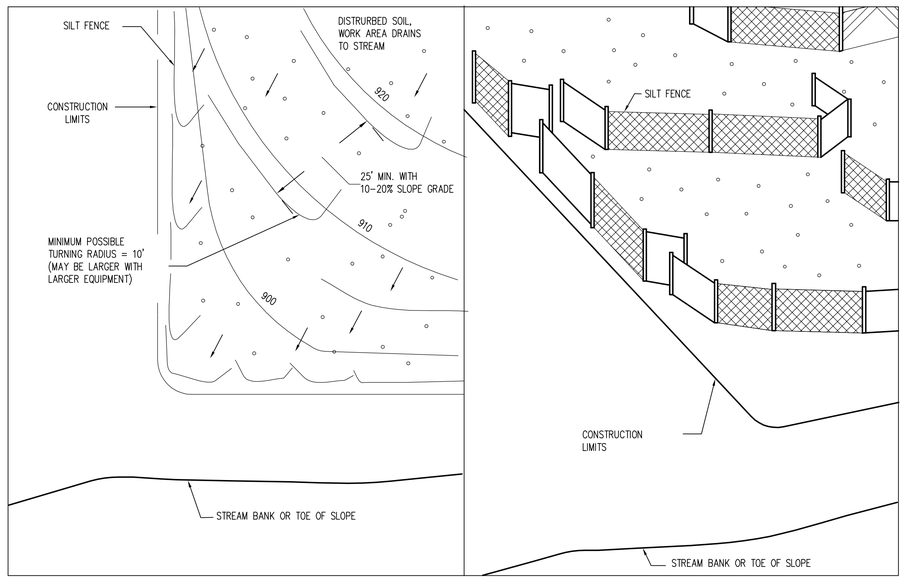
DESIGN GUIDELINES:

TO PROTECT AREAS FROM SHEET FLOW.
MAXIMUM CONTRIBUTING AREA: 1 ACRE.

NOTES:

SEE SPECS. 2573, 3149 & 3886.

(1) COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.



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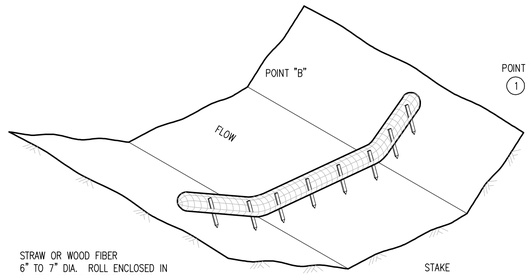
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SHEET TITLE
EROSION, AND SEDIMENTATION CONTROL NOTES AND DETAILS (SHEET 3 OF 4)

SHEET NUMBER
C409

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Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C409.dwg Plotted on: 3/30/2010 5:05 PM Plotted by: Dixon, Lukas



TYPE 2: BIOROLL DITCH CHECK

USE ON ROUGH GRADED AREAS

NOTES:

SEE SPECS. 2573, 3885, 3886 & 3889.

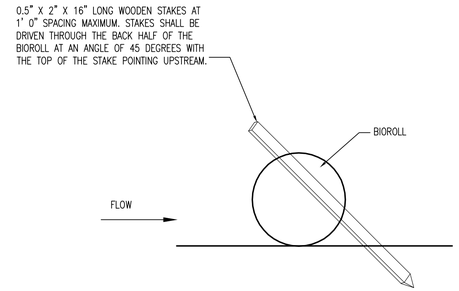
SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM SPACING FORMULA:

$$\text{SPACING OF DITCH CHECKS (FT.)} = \frac{\text{DITCH CHECK HEIGHT (FT)}}{\text{\% CHANNEL SLOPE}} \times 100$$

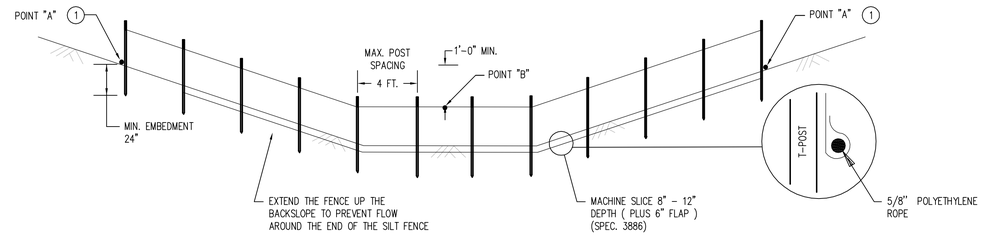
(1) POINT "A" MUST BE A MINIMUM OF 6 INCHES HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

(2) CLASS I – IV RIPRAP (SPEC. 3601) WITH GEOTEXTILE FABRIC LINER, TYPE IV (SPEC. 3733).

(3) THE ROCK WEEPER FILTERS SEDIMENT OUT OF THE WATER BETTER THAN THE OTHER DITCH CHECKS. THE ROCK WEEPER COULD BE USED AS A PERMANENT WATER FILTERING FEATURE.



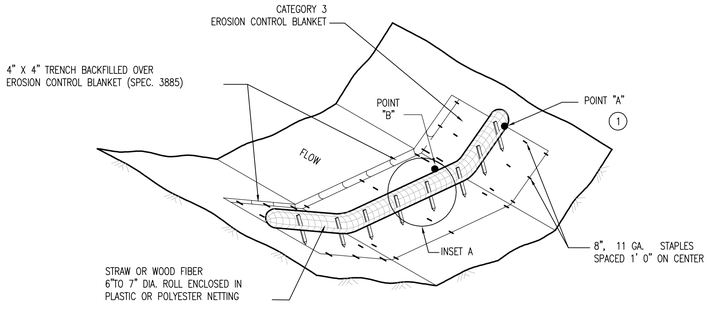
BIOROLL STAKING DETAIL



NOTE: WHEN SEDIMENT BUILD UP REACHES 8 INCHES OR 1/3 OF SILT FENCE HEIGHT, THE SILT FENCE MUST BE CLEANED OUT OR REPLACED.

MACHINE SLICED SILT FENCE

(TYPE 1 SPEC. 3889)



TYPE 3: BIOROLL BLANKET SYSTEM DITCH CHECK

NOTES:

SEE SPECS. 2573, 3885, 3886 & 3889.

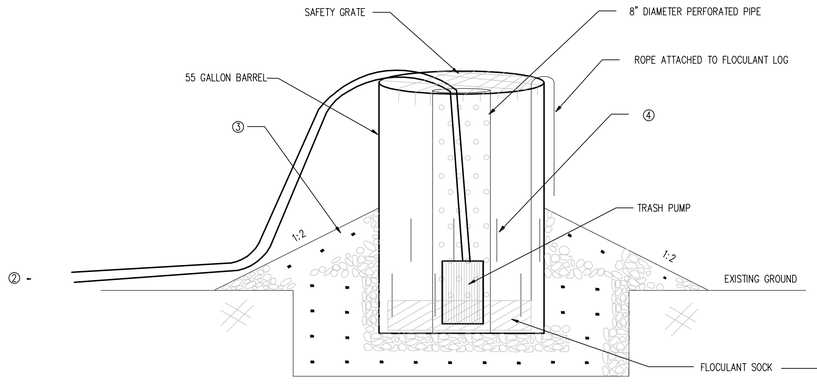
SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM SPACING FORMULA:

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(2) CLASS I – IV RIPRAP (SPEC. 3601) WITH GEOTEXTILE FABRIC LINER, TYPE IV (SPEC. 3733).

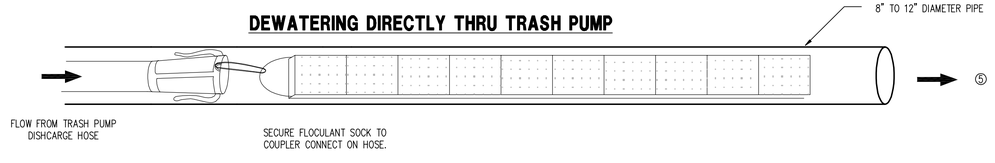
(3) THE ROCK WEEPER FILTERS SEDIMENT OUT OF THE WATER BETTER THAN THE OTHER DITCH CHECKS. THE ROCK WEEPER COULD BE USED AS A PERMANENT WATER FILTERING FEATURE.



SUMP DEWATERING FOR POND

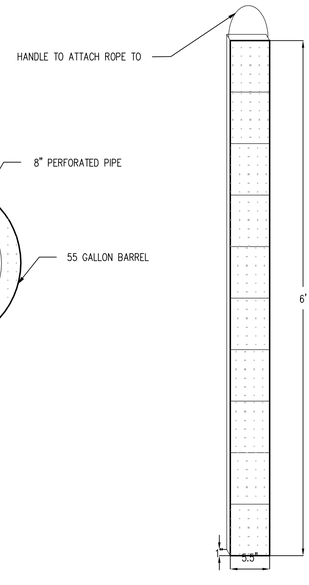
TOP VIEW

DEWATERING DIRECTLY THRU TRASH PUMP



NOTES

1. DEWATERING DEVICE SHOULD BE PLACED AT THE LOW POINT OF THE AREA TO DRAIN
2. MUST DISCHARGE WATER TO AN APPROPRIATE LOCATION SUCH AS A SMALL SETTING BASIN. DO NOT DISCHARGE TO AN EXISTING SURFACE WATER. MUST USE APPROPRIATE ENERGY DISSIPATION TO PREVENT SOIL SCOUR AND TRANSPORT.
3. 1"–2" DIAMETER CLEAN ROCK. ROCK IS TO BE PLACED 2 INCHES ABOVE HIGHEST SLIT IN BARREL.
4. 12" SLITS CUT INTO LOWER HALF OF BARREL.
5. MUST DISCHARGE WATER TO A SEDIMENT BASIN OR SEDIMENT TRAP. DO NOT DISCHARGE DIRECTLY TO A WATER BODY.



TYPICAL FLOCULANT SOCK

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AEP PROJECT NUMBER

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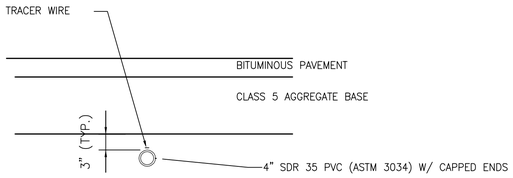
SHEET TITLE

EROSION, AND SEDIMENTATION CONTROL NOTES AND DETAILS (SHEET 4 OF 4)

SHEET NUMBER

C410

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TYPICAL IRRIGATION CONDUIT PLACEMENT

NTS

CONDUIT PLACEMENT NOTES:

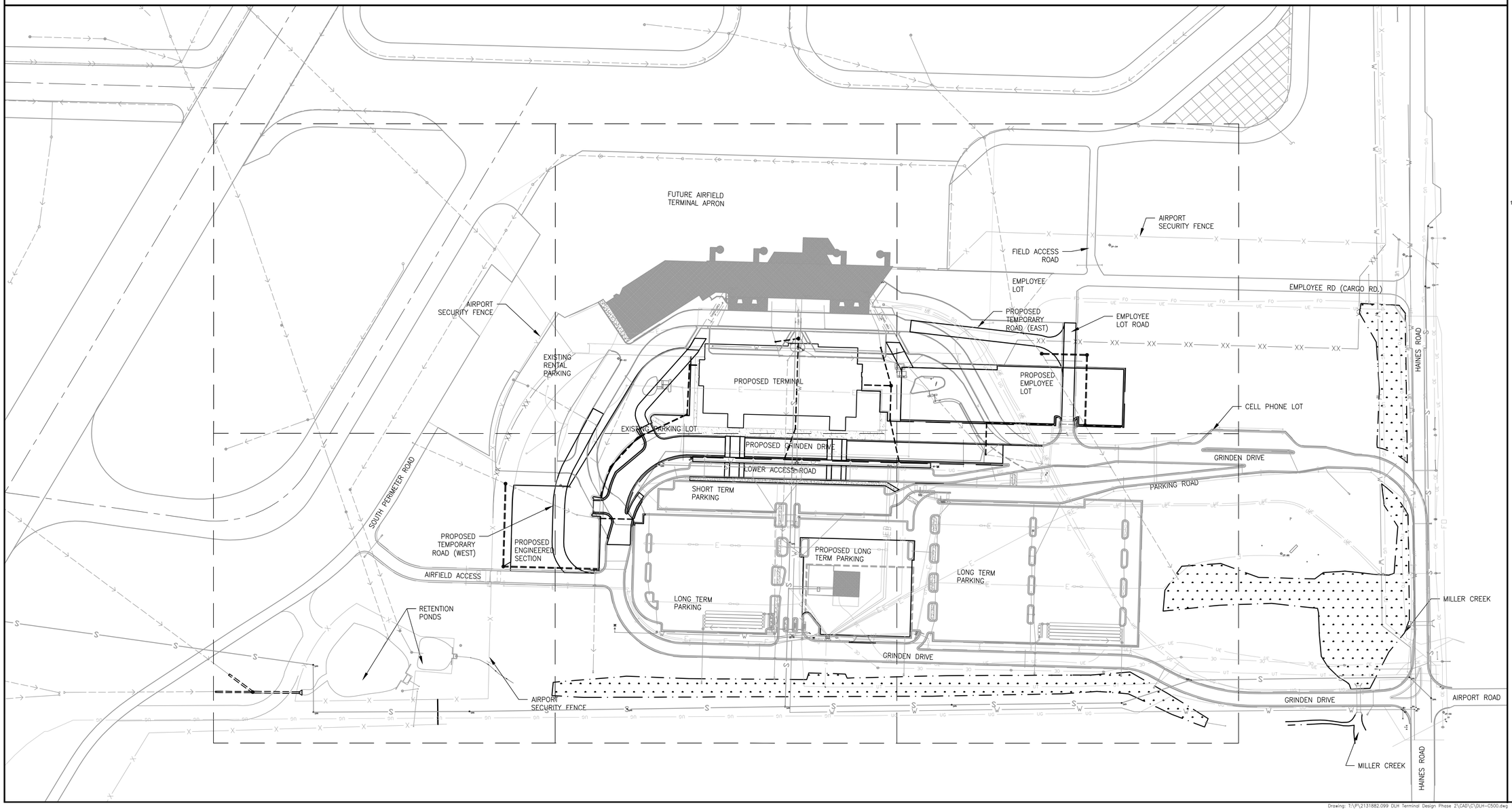
1) THE #6 AWG BSD COPPER COUNTERPOISE WIRE SHALL BE CENTERED THE DUCT.

2) EXTEND AND CAP A MINIMUM OF 2 FEET BEHIND BACK OF CURB.

3) THE CONTRACTOR SHALL PROVIDE SURVEY TIES OF END LOCATIONS TO ENGINEER.

NORTH

0 100' 200'



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DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

DRAINAGE OVERALL PLAN

SHEET NUMBER

C500

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C500.dwg Plotted on: 3/31/2010 1:12 PM Plotted by: Dixon, Lukas

EXISTING STRM
RIM=1408.00
INV.=1403.40

EXISTING STRM
RIM=1409.84
NE=1400.30
S=1400.26

EXISTING STRM
RIM=1408.68
N=1399.49
S=1399.40

EXISTING STRM
RIM=1408.53
N=1399.26
S=1399.12

FUTURE (N.I.C.) TERMINAL APRON

EXISTING STRM
RIM=1409.68
INV.=1405.65

EXISTING STORM MANHOLE
RIM ELEV.=1408.36

EXISTING STORM MANHOLE
RIM ELEV.=1409.23
INV.=1401.40

TAXIWAY "D"

EXISTING STRM
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N 1398.30
S=1398.05

SOUTH PERIMTER ROAD

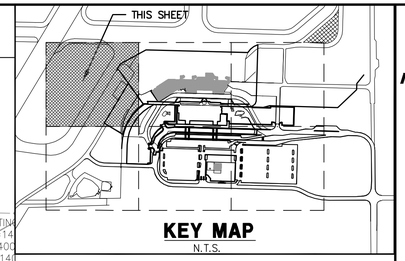
EXISTING STRM
RIM=1408.15

EXIDTIN STRM
RIM=1408.15

BITUMINOUS APRON

MATCH LINE SHEET C502

MATCH LINE SHEET C504



KEY MAP
N.T.S.

NORTH

0 30' 60'

DRAINAGE LEGEND

- ■ STORM STRUCTURE (48" DIA.)
- ◉ STORM STRUCTURE (>48" DIA.)
- === CP HDPE PIPE
- △ FLARED END SECTION
- (S-73) STRUCTURE NAME
- (FES-09) FLARED END SECTION NAME
- — —— — 4" PERF. PVC PIPE UNDERDRAIN

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Landscaping Consultants:
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2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: JOHN E. HIPPCHEN

Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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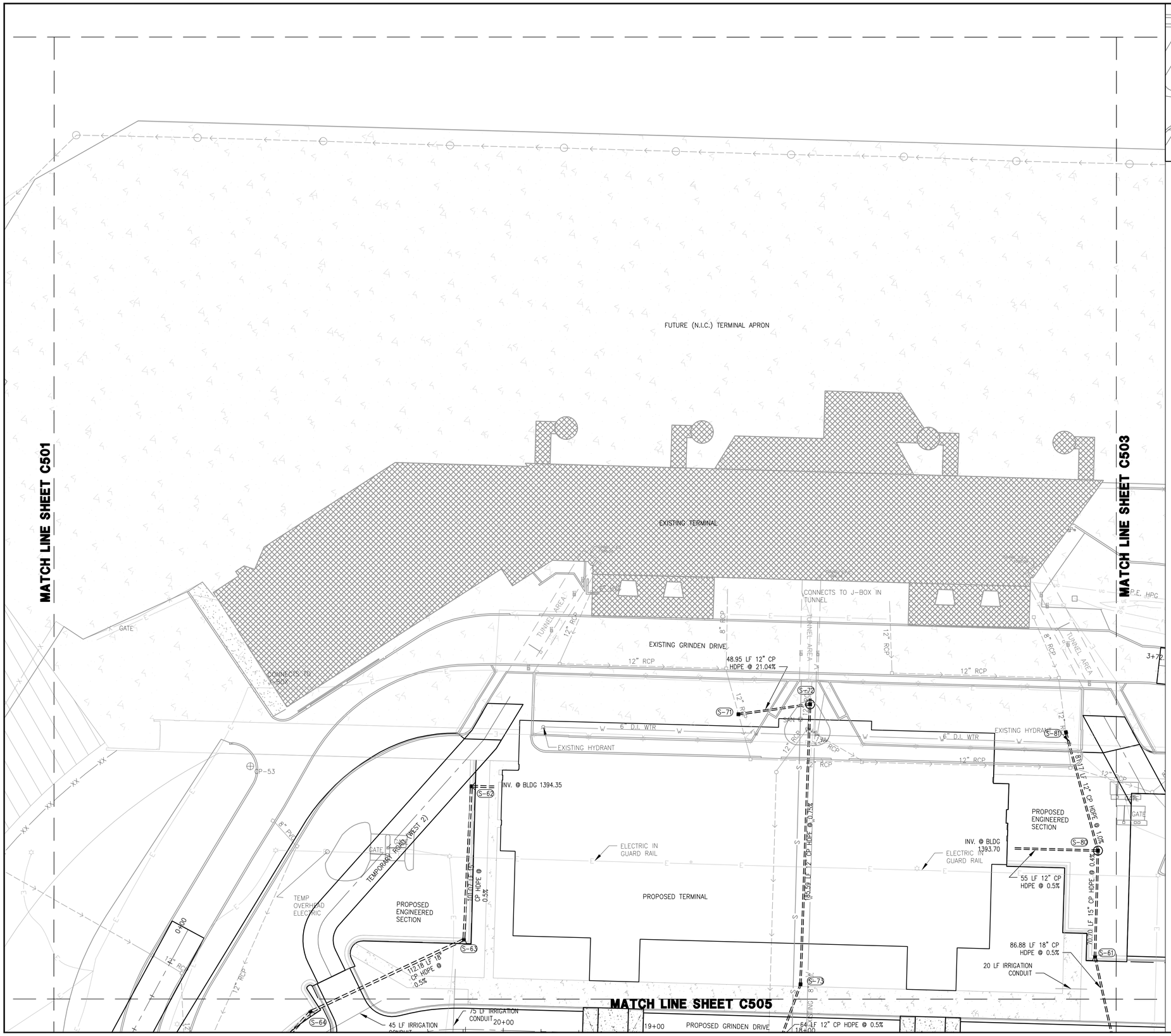
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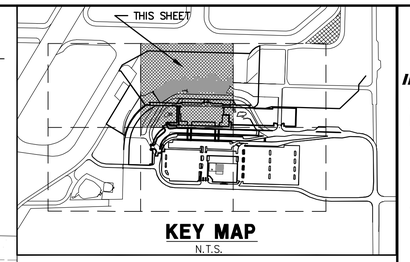
DRAINAGE PLAN (SHEET 1 OF 6)

SHEET NUMBER
C501

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C501.dwg Plotted on: 3/31/2010 1:40 PM Plotted by: Dixon, Lukas





KEY MAP
N.T.S.

NORTH

0 30' 60'

DRAINAGE LEGEND

- STORM STRUCTURE (48" DIA.)
- STORM STRUCTURE (>48" DIA.)
- CP HDPE PIPE
- FLARED END SECTION
- S-73 STRUCTURE NAME
- FES-09 FLARED END SECTION NAME
- 4" PERF. PVC PIPE UNDERDRAIN

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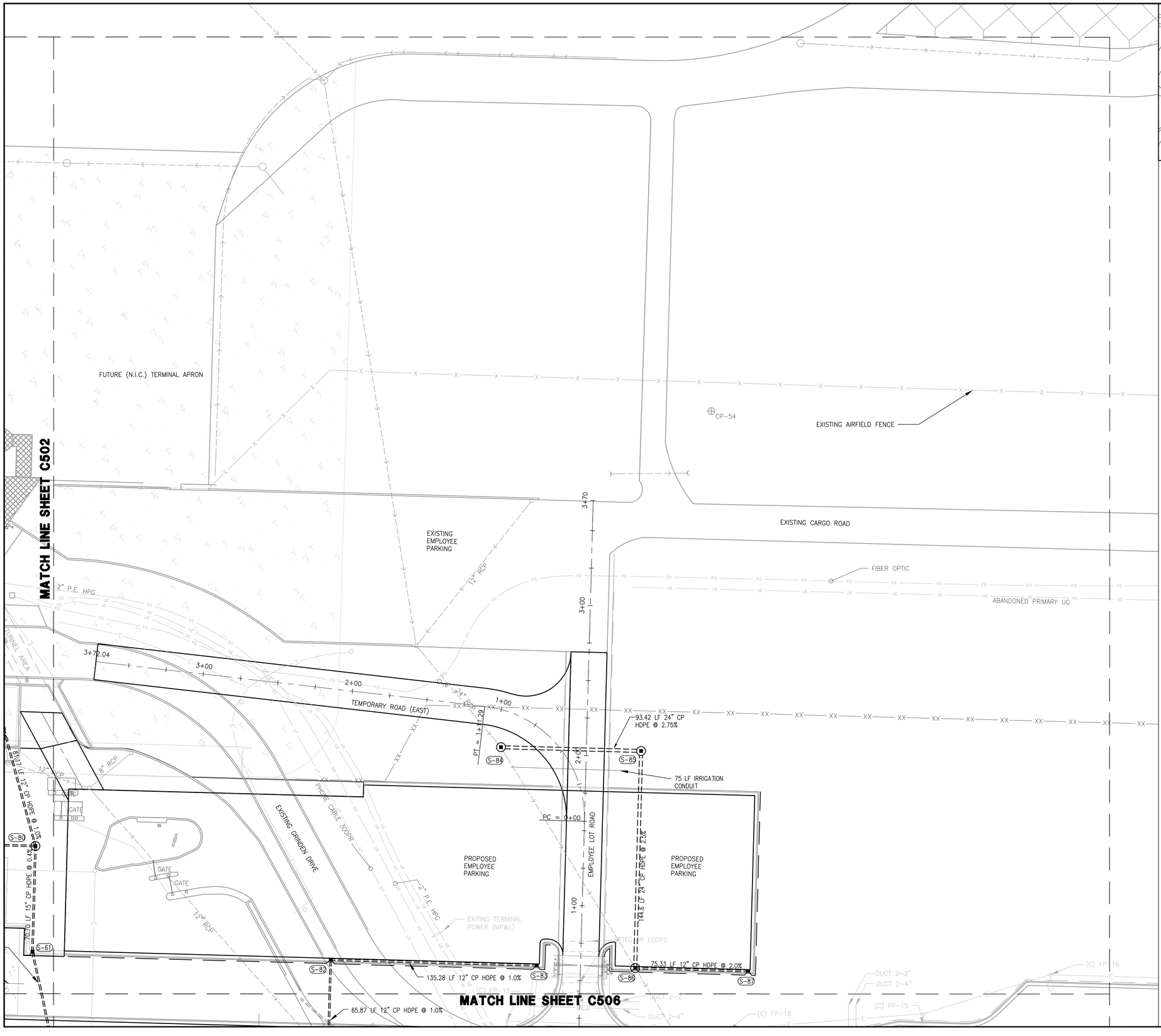
SHEET TITLE

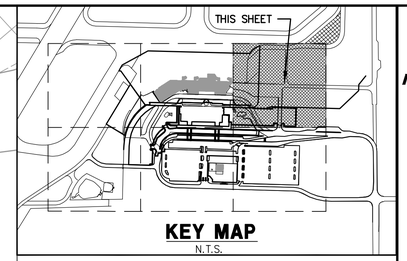
DRAINAGE PLAN (SHEET 2 OF 6)

SHEET NUMBER
C502

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C502.dwg Plotted on: 3/31/2010 2:08 PM Plotted by: Dixon, Lukas





KEY MAP
N.T.S.

NORTH

0 30' 60'

DRAINAGE LEGEND

- STORM STRUCTURE (48" DIA.)
- STORM STRUCTURE (>48" DIA.)
- CP HDPE PIPE
- FLARED END SECTION
- S-73 STRUCTURE NAME
- FES-09 FLARED END SECTION NAME
- 4" PERF. PVC PIPE UNDERDRAIN

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REVISIONS

NO.	DESCRIPTION	DATE

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DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

DRAINAGE PLAN (SHEET 3 OF 6)

SHEET NUMBER
C503

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C503.dwg Plotted on: 3/31/2010 2:11 PM Plotted by: Dixon, Lukas

MATCH LINE SHEET C501

MATCH LINE SHEET C505

RIM ELEV.=1409.23
INV.=1401.40

EXISTING STRM MH
RIM=1402.55

TAXIWAY "D"

EXISTING STRM
RIM=1406.33
SE=1399.13

BITUMINOUS APRON

EXISTING STRM
RIM=1406.74
N=1395.97
SE=1395.90

EXISTING SOUTH PERIMETER ROAD

EXISTING STRM RIM
ELEV.=1405.78

S-91

CP-HDPE

2+00

PT = 2+1

RCP

PC = 2+87

3+00

S-90

170.59 LF 24" CP HDPE @ 0.50%

PROPOSED
ENGINEERED
SECTION

5+50.75

12" HDPE

5+00

PT = 4+74.12

PC = 3+92.77

4+00

DUCTS 4~2"

DETECTOR LOOP

EXISTING AIRFIELD ACCESS ROAD

3+00

2+00

1+00

EXISTING GATE

(C) FP-1

STM RCP 24"

STM RCP 15"

EXIST. STRM
RIM=1401.06
INV.=1393.55

EXISTING FENCE

15" RCP
FES=1392.19

FES.=1388.00

EXISTING POND

EXIST. STRM MH
RIM=1393.00
INV.=1388.21

24"
FES=1384.54

EXISTING SAN MH
(EXTERNAL DROP)
RIM EL. 1398.93
INV EL. W 1394.01
INV EL. W 1387.26
INV EL. S 1387.18

SAN

42" RCP
FES=1394.32

EXISTING
FES=1394.32

60.67 LF 42" CP
HDPE @ 0.5%

S-92

EXISTING 30" RCP
FES=1394.50

76.99 LF 30" CP
HDPE @ 3.0%

36" CMP
FES=1391.32

CMP 42"
FES=1388.82

FES-01

FES =INV. 1389.82

101.39 LF 42" CP
HDPE @ 2.24%

EXISTING POND

44" RCP FES=1381.75

15" CMP

EXIST. STRM MH
RIM=1392.84

30" RCP FES=1386.81

8" CLAY PIPE

3" P.E. HPG

EXISTING SAN MH
RIM EL. 1396.38
INV EL. 1385.44

EXISTING SAN MH
R.E.=1390.3
I.E.=1380.36

30" RCP FES=1384.61

8" CLAY PIPE

STA: 24+

THIS SHEET

KEY MAP
N.T.S.

NORTH

0 30' 60'

DRAINAGE LEGEND

- STORM STRUCTURE (48" DIA.)
- STORM STRUCTURE (>48" DIA.)
- CP HDPE PIPE
- FLARED END SECTION
- S-73 STRUCTURE NAME
- FES-09 FLARED END SECTION NAME
- 4" PERF. PVC PIPE UNDERDRAIN

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SHEET TITLE

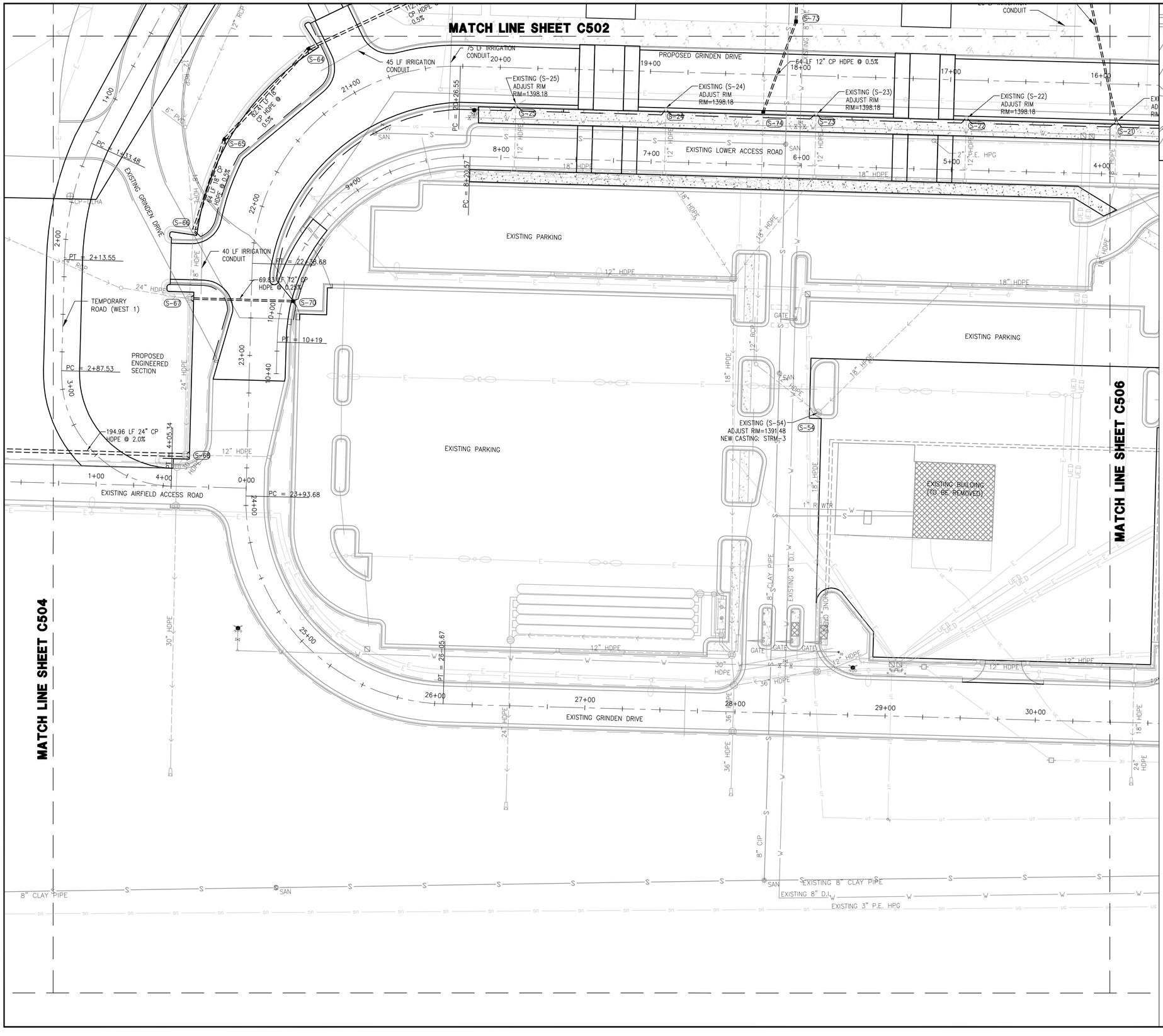
DRAINAGE PLAN (SHEET 4 OF 6)

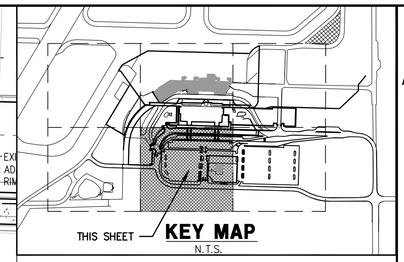
SHEET NUMBER

C504

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C504.dwg Plotted on: 3/31/2010 2:12 PM Plotted by: Dixon, Lukas





NORTH

0 30' 60'

DRAINAGE LEGEND

- STORM STRUCTURE (48" DIA.)
- STORM STRUCTURE (>48" DIA.)
- CP HDPE PIPE
- FLARED END SECTION
- (S-73) STRUCTURE NAME
- (FES-09) FLARED END SECTION NAME
- 4" PERF. PVC PIPE UNDERDRAIN

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SHEET TITLE

DRAINAGE PLAN (SHEET 5 OF 6)

SHEET NUMBER
C505

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Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C505.dwg Plotted on: 3/31/2010 2:15 PM Plotted by: Dixon, Lukas

MATCH LINE SHEET C503

MATCH LINE SHEET C505

135.28 LF 12" CP HDPE @ 1.0%

65.87 LF 12" CP HDPE @ 1.0%

75.33 LF 12" CP HDPE @ 2.0%

S-82 S-83 S-86 S-87

16+00 15+00 14+00 13+00 12+00 11+00 10+00 9+00

EXISTING (S-21)
ADJUST RIM
RIM=1398.20

55 LF IRRIGATION CONDUIT

S-02

12" HDPE

24" RCP

EXISTING CELL LOT

EXISTING GRINDEN DRIVE

EXISTING LOWER ACCESS ROAD

4+00 3+00 2+00 1+00 0+00

PC = 2+75.47

PC = 0+79.39

PC = 0+60.00

EXISTING PARKING ROAD

EXISTING PARKING

12" HDPE

PHONE CABLE 300PR ?

2" P.E. HPG

30" HDPE

18" HDPE

24" HDPE

31+00 32+00 33+00 34+00 35+00 36+00 37+00

EXISTING GRINDEN DRIVE

PC = 35+12.68

PRC = 35+89.94

12" HDPE

EXISTING SAN MH
R.E.=1382.22
I.E. E=1367.22
I.E. W=1367.12

SAN

EXISTING 8" CLAY PIPE

EXISTING 8" D.I. WTR

EXISTING 3" P.E. HPG

EXISTING SAN MH
R.E.=1380.4
I.E.=1370.35

EXISTING SAN MH
R.E.=1377.5
I.E.=1367.90

30"CMP

KEY MAP
N.T.S.
THIS SHEET

NORTH

0 30' 60'

DRAINAGE LEGEND

- STORM STRUCTURE (48" DIA.)
- STORM STRUCTURE (>48" DIA.)
- CP HDPE PIPE
- FLARED END SECTION
- (S-73) STRUCTURE NAME
- (FES-09) FLARED END SECTION NAME
- 4" PERF. PVC PIPE UNDERDRAIN

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SHEET TITLE

DRAINAGE PLAN (SHEET 6 OF 6)

SHEET NUMBER
C506

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C506.dwg Plotted on: 3/31/2010 2:20 PM Plotted by: Dixon, Lukas

STRM MH (S-02)	
Drainage Stucture Design 48-4020	
Casting STRM-1	
STA:14+10.81, 6.46 LT	Centerline Structure
STA:14+10.81, 6.46 LT	Centerline Casting
RIM ELEV	1397.03
INV: N	1387.30
INV: SE	1387.20
STRM MH (S-21)	
Drainage Stucture Design 48-4020	
Casting STRM-3	
STA:15+88.96, 25 LT	Centerline Structure
STA:15+88.96, 25 LT	Centerline Casting
RIM ELEV (ADJUST)	1398.20
INV: NW	1392.63
INV: S	1392.53
STRM MH (S-61)	
Drainage Stucture Design 48-4020	
Casting STRM-3	
STA:16+09.55, 59.41 RT	Centerline Structure
STA:16+09.55, 59.41 RT	Centerline Casting
RIM ELEV	1400.79
INV: N	1393.08
INV: SE	1392.98
STRM MH (S-62)	
Drainage Stucture Design 48-4020	
Casting STRM-3	
STA:20+25.55, 161.13 RT	Centerline Structure
STA:20+25.55, 161.13 RT	Centerline Casting
RIM ELEV	1400.47
INV: S	1394.24
INV: E	1394.14
STRM MH (S-63)	
Drainage Stucture Design 48-4020	
Casting STRM-3	
STA:20+27.36, 59.43 RT	Centerline Structure
STA:20+27.36, 59.43 RT	Centerline Casting
RIM ELEV	1400.08
INV: N	1393.54
INV: SW	1393.54
STRM MH (S-64)	
Drainage Stucture Design 48-4020	
Casting STRM-3	
STA:21+09.35, 41.00 RT	Centerline Structure
STA:21+09.35, 41.00 RT	Centerline Casting
RIM ELEV	1399.88
INV: NW	1392.98
INV: SW	1392.88
STRM MH (S-65)	
Drainage Stucture Design 48-4020	
Casting STRM-3	
STA:21+73.19, 41.00 RT	Centerline Structure
STA:21+73.19, 41.00 RT	Centerline Casting
RIM ELEV	1399.41
INV: NW	1392.46
INV: SW	1392.36
STRM MH (S-66) EXISTING	
Drainage Stucture Design F	
Casting STRM-3	
STA:22+22.85, 41.00 RT	Centerline Structure
STA:22+22.85, 41.00 RT	Centerline Casting
RIM ELEV	1398.83
INV: NW	1392.04
INV: S EXISTING	1391.94
STRM MH (S-67) EXISTING	
Drainage Stucture Design 72-4020	
Casting STRM-3	
STA:22+63.12, 41.00 RT	Centerline Structure
STA:22+63.12, 41.00 RT	Centerline Casting
RIM ELEV	1398.18
INV: N EXISTING	1391.71
INV: S EXISTING	1391.61
INV: E	1391.81
INV: W REMOVE	1394.47
STRM MH (S-68) EXISTING	
Drainage Stucture Design 60-4020	
Casting STRM-3	
STA:22+67.51, 41.00 RT	Centerline Structure
STA:22+67.51, 41.00 RT	Centerline Casting
RIM ELEV	1395.48
INV: N EXISTING	1388.70
INV: SW EXISTING	1388.60
INV: E EXISTING	1388.70
INV: W	1388.71
STRM MH (S-70)	
Drainage Stucture Design G	
Casting STRM-3	
STA:22+63.13, 27.84 LT	Centerline Structure
STA:22+63.13, 27.84 LT	Centerline Casting
RIM ELEV	1396.47
INV: W	1392.15
STRM MH (S-71)	
Drainage Stucture Design 48-4020	
Casting STRM-1	
STA:18+80.03, 213.67 RT	Centerline Structure
STA:18+80.03, 213.67 RT	Centerline Casting
RIM ELEV	1405.00
INV: NW EXISITNG	1399.78+/-
INV: NE	1399.68
STRM MH (S-72)	
Drainage Stucture Design 60-4020	
Casting STRM-1	
STA:18+02.75, 221.50 RT	Centerline Structure
STA:18+02.75, 221.50 RT	Centerline Casting
RIM ELEV	1399.00
INV: NW EXISITNG	1389.46+/-
INV: S	1389.36
INV: SW	1389.60

STRM MH (S-73)	
Drainage Stucture Design 48-4020	
Casting STRM-1	
STA:18+04.05, 35.91 RT	Centerline Structure
STA:18+04.05, 35.91 RT	Centerline Casting
RIM ELEV	1400.02
INV: N	1387.97
INV: S	1387.87
STRM MH (S-74)	
Drainage Stucture Design 48-4020	
Casting STRM-3	
STA:18+24.17, 24.91 LT	Centerline Structure
STA:18+24.17, 24.91 LT	Centerline Casting
RIM ELEV	1398.26
INV: N	1387.55
INV: S EXISTING	1387.45
STRM MH (S-80)	
Drainage Stucture Design 60-4020	
Casting STRM-1	
STA:16+09.55, 129.80 RT	Centerline Structure
STA:16+09.55, 129.80 RT	Centerline Casting
RIM ELEV	1400.85
INV: N	1393.46
INV: S	1393.36
INV: W	1393.36
STRM MH (S-81)	
Drainage Stucture Design 48-4020	
Casting STRM-1	
STA:16+32.82, 207.55 RT	Centerline Structure
STA:16+32.82, 207.55 RT	Centerline Casting
RIM ELEV	1402.71
INV: NW	1396.21+/-
INV: SE	1394.27
STRM MH (S-82)	
Drainage Stucture Design 48-4020	
Casting STRM-3	
STA:14+10.78, 59.47 RT	Centerline Structure
STA:14+10.78, 59.47 RT	Centerline Casting
RIM ELEV	1396.83
INV: S	1387.95
INV: E	1388.05
STRM MH (S-83)	
Drainage Stucture Design G	
Casting STRM-3	
STA:12+73.54, 59.41 RT	Centerline Structure
STA:12+73.54, 59.41 RT	Centerline Casting
RIM ELEV	1394.09
INV: W	1389.41
STRM MH (S-84)	
Drainage Stucture Design 60-4020	
Casting STRM-?	
STA:13+01.27, 204.06 RT	Centerline Structure
STA:13+01.27, 204.06 RT	Centerline Casting
RIM ELEV	1400.50
INV: NW EXISTING	1394.62
INV: E	1394.50
STRM MH (S-85)	
Drainage Stucture Design 60-4020	
Casting STRM-?	
STA:12+07.88, 204.06 RT	Centerline Structure
STA:12+07.88, 204.06 RT	Centerline Casting
RIM ELEV	1399.50
INV: W	1392.10
INV: S	1392.00
STRM MH (S-86)	
Drainage Stucture Design 60-4020	
Casting STRM-3	
STA:12+07.88, 59.46 RT	Centerline Structure
STA:12+07.88, 59.46 RT	Centerline Casting
RIM ELEV	1393.99
INV: N	1388.45
INV: SE EXISTING	1388.31
INV: E	1388.45
STRM MH (S-87)	
Drainage Stucture Design G	
Casting STRM-3	
STA:11+32.56, 59.46 RT	Centerline Structure
STA:11+32.56, 59.46 RT	Centerline Casting
RIM ELEV	1393.62
INV: W	1389.92
STRM MH (S-90)	
Drainage Stucture Design 60-4020	
Casting STRM-?	
STA:23+67.54, 235.96 RT	Centerline Structure
STA:23+67.54, 235.96 RT	Centerline Casting
RIM ELEV	1398.90
INV: E	1392.61
INV: N	1392.71
STRM MH (S-91)	
Drainage Stucture Design 60-4020	
Casting STRM-?	
STA:22+23.57, 238.33 RT	Centerline Structure
STA:22+23.57, 238.33 RT	Centerline Casting
RIM ELEV	1401.43
INV: NW EXISTING	1398.75+/-
INV: S	1396.08
STRM MH (S-92)	
Drainage Stucture Design 72-4020	
Casting STRM-?	
STA:24+30.51, 778.56 RT	Centerline Structure
STA:24+30.51, 778.56 RT	Centerline Casting
RIM ELEV	1398.53
INV: NW	1394.02
INV: W	1392.19
INV: E	1392.09

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DULUTH AIRPORT AUTHORITY

DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW TERMINAL DESIGN

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: JOHN E. HIPPCHEN

Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

DRAINAGE PROFILES (AREA 2) (SHEET 1 OF 4)

SHEET NUMBER

C507

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C507.dwg Plotted on: 3/31/2010 2:26 PM Plotted by: Dixon, Lukas

WATER NOTES

1. ALL WATER LINES, HYDRANTS, VALVES AND FITTINGS SHALL BE INSTALLED AS PER THE CITY OF DULUTH PUBLIC WORKS UTILITIES DEPARTMENT STANDARD CONSTRUCTION SPECIFICATIONS, 2010 EDITION.

2. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES WITH THE ENGINEER PRIOR TO PURCHASE AND DELIVERY.

3. THE CONTRACTOR SHALL COORDINATE ALL WATER OUTAGES WITH THE ENGINEER A MINIMUM OF 48 HOURS IN ADVANCE IN WRITING. (WET TAPS PERMISSIBLE FOR CONNECTIONS TO EXISTING 8" D.I. WATERMAIN.)

4. THE CONTRACTOR SHALL COORDINATE ALL VALVE OPERATIONS FOR TESTING WITH THE CITY OF ALL NEW WATER LINE AS SPECIFIED, AND INFORM THE ENGINEER OF TEST TIMES AND RESULTS.

SANITARY NOTES

1. ALL SANITARY LINES AND MANHOLES SHALL BE INSTALLED AS PER THE CITY OF DULUTH PUBLIC WORKS UTILITIES DEPARTMENT STANDARD CONSTRUCTION SPECIFICATIONS, 2010 EDITION.

2. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES WITH THE ENGINEER PRIOR TO PURCHASE AND DELIVERY.

3. THE CONTRACTOR CAN PLACE TEMPORARY BYPASS IN EXISTING SANITARY LINE OR OFF PEAK CONNECTION WHILE CONSTRUCTION OF SANITARY MANHOLE (SAN-1)

4. THE SANITARY LINES MARKED TEMPORARY ARE TO BE USED TILL THE OLD EXISTING TERMINAL IS REMOVED

GAS NOTES

1. THE CONTRACTOR SHALL INSTALL ALL GAS MAINS AND SERVICES PER THE CITY OF DULUTH PUBLIC WORKS UTILITIES DEPARTMENT STANDARD CONSTRUCTION SPECIFICATIONS, 2010 EDITION.

2. ALL CONNECTIONS TO THE EXISTING 2" GAS MAIN SHALL BE DONE BY THE CITY OF DULUTH OPERATIONS.

3. THE INSTALLER SHALL BE CERTIFIED BY THE CITY OF DULUTH.

4. THE CONTRACTOR SHALL COORDINATE ANY OUTAGES WITH THE ENGINEER A MINIMUM OF 48 HOURS IN ADVANCE IN WRITING.

5. THE CONTRACTOR SHALL COORDINATE ALL TESTING WITH THE CITY OF ALL NEW GAS MAIN AS SPECIFIED, AND INFORM THE ENGINEER OF TEST TIMES AND RESULTS.

6. CITY ENGINEERING SHALL BE NOTIFIED 48 HOURS IN ADVANCE OF WORK AND INSPECT ALL PIPE INSTALLATION AND CONNECTIONS.

7. PRIOR TO ANY EXCAVATION OF PROPOSED GRINDEN DRIVE, THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF GAS MAINS WITHIN EXCAVATION LIMITS.

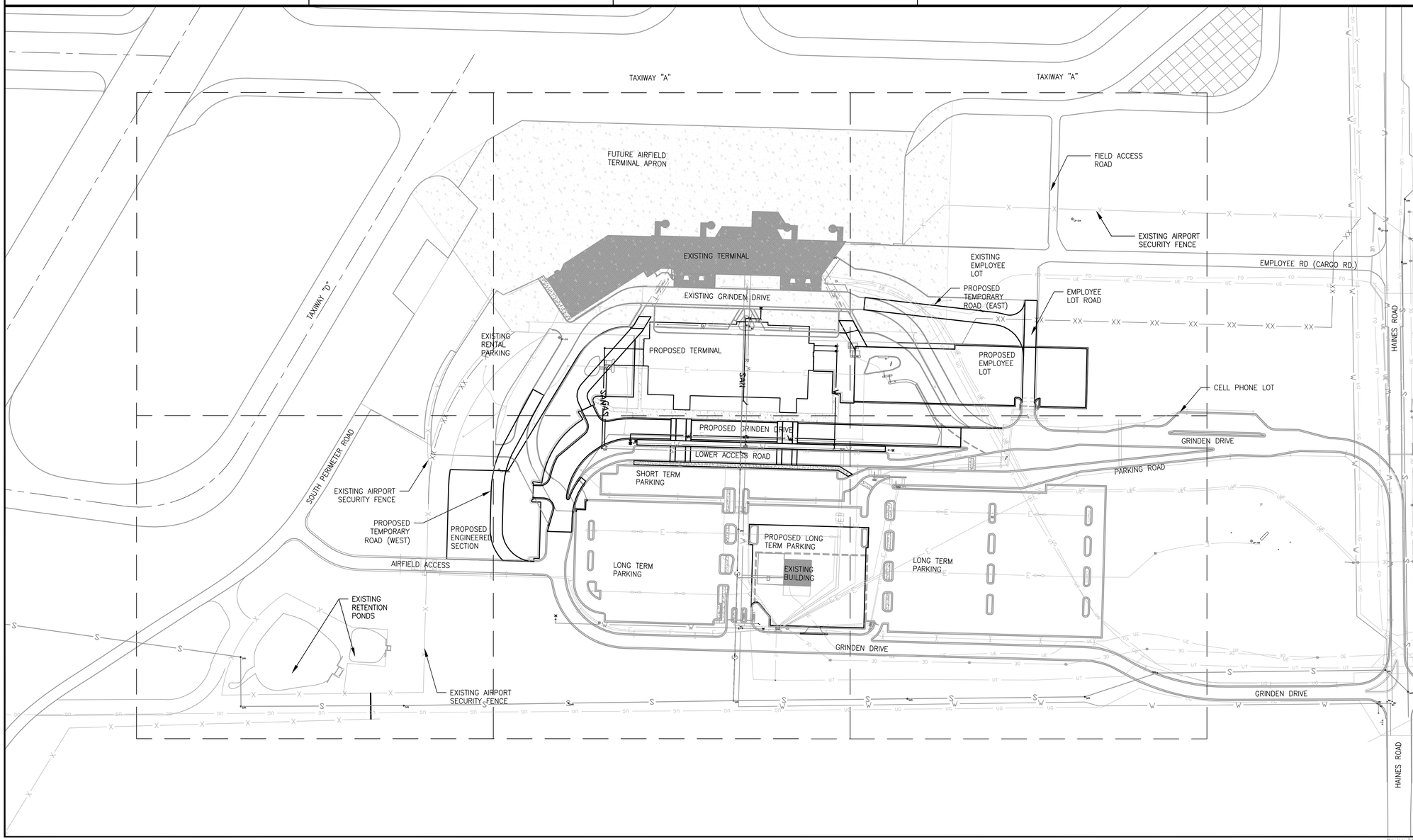
NORTH

0 100' 200'

NOTE:

1. PRIOR TO DIGGING THE CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL. 1-800-252-1166

2. THE CONTRACTOR SHALL BE RESPONSIBLE TO MARK, MAINTAIN, AND REMARK IF NECESSARY, ALL PRIVATE (DAA) OWNED UTILITIES.



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Signature: John E. Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

SITE UTILITY OVERALL PLAN AND NOTES

SHEET NUMBER

C600

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C600.dwg Plotted on: 3/31/2010 3:22 PM Plotted by: Dixon, Lukas

NOTE:
THE LOCATION OF EXISTING ELECTRICAL DUCTS, STORM SEWER PIPE AND OTHER UTILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE, THERE MAY BE OTHER UTILITIES WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. CONTRACTORS SHALL VERIFY THE ACTUAL LOCATION OF THE UTILITIES IN THE FIELD BEFORE EXCAVATION.

STRM MH

STRM MH

STRM MH

STRM MH

STRM MH

STRM MH

STRM MH

STRM MH

STRM MH

TAXIWAY "D"

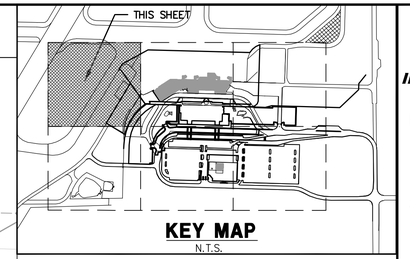
BITUMINOUS APRON

EXISTING RENTAL LOT

CB

MATCH LINE SHEET C602

MATCH LINE SHEET C604



KEY MAP
N.T.S.

NORTH

0 30' 60'

LEGEND

- 2/C #6 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 4/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 2/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- UED — UED — PROPOSED CONDUIT DUCTS
- OHE — PROPOSED OVERHEAD ELECT.
- OE — OE — EXISTING OVERHEAD ELECT.
- EXISTING POWER POLE
- PROPOSED POWER POLE
- PROPOSED ELECT. MANHOLE
- PROPOSED LIGHT POLES
- T PROPOSED PHONE PEDESTAL
- PROPOSED COMM MANHOLE
- UE — UE — EXISTING UNDERGROUND ELECT.
- E — EXISTING –PRIVATE– ELECT.
- EXISTING LIGHT & POLE
- UT — UT — PROPOSED PHONE CABLES
- UT — UT — EXISTING PHONE CABLES
- UTV — UTV — EXISTING CATV CABLES
- FO — FO — EXISTING FIBER OPTIC CABLE
- EXISTING PARKING GATE
- EXISTING ELECT. MANHOLE
- W — PROPOSED WATERMAIN
- W — EXISTING WATERMAIN
- S — EXISTING SANITARY
- SAN — PROPOSED SANITARY
- SAN EXISTING SANITARY MANHOLE
- PROPOSED SANITARY MANHOLE
- UG — UG — EXISTING GAS LINE
- GAS — GAS — PROPOSED GAS LINE
- EXISTING HYDRANT
- PROPOSED HYDRANT
- PROPOSED WATER VALVE
- WV EXISTING WATER VALVE
- PROPOSED STORM PIPE
- PROPOSED EDGE DRAINS
- EXISTING STORM PIPE

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NEW TERMINAL DESIGN

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Signature: John E. Hippchen

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REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

SITE UTILITY PLAN (SHEET 1 OF 6)

SHEET NUMBER
C601

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C601.dwg Plotted on: 3/31/2010 3:38 PM Plotted by: Dixon, Lukas

NOTE:
1 ALL UTILITY OUTAGES SHALL BE OFF PEAK HOURS, CONTRACTOR SHALL COORDINATE OUTAGES WITH RPR, CM, AND THE DULUTH AIRPORT REPRESENTATIVE.

2 ALL UTILITIES UNDER PROPOSED TERMINAL ARE (TEMPORARY),UTILITIES WILL BE TERMINATED AT THE TIME UTILITIES ARE CUT OFF FOR EXISTING TERMINAL.

3 ALL UTILITIES MARKED (PRIVATE) SHALL BE DONE BY THE BLDG CONTRACTOR,PERMITS REQUIRED.

4 ALL UTILITIES MARKED (PUBLIC) SHALL BE CITY OF DULUTH OWNED AFTER INSTALLATION.

NOTE:
THE LOCATION OF EXISTING ELECTRICAL DUCTS, STORM SEWER PIPE AND OTHER UTILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE, THERE MAY BE OTHER UTILITIES WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. CONTRACTORS SHALL VERIFY THE ACTUAL LOCATION OF THE UTILITIES IN THE FIELD BEFORE EXCAVATION.

WATER MAIN NOTES:

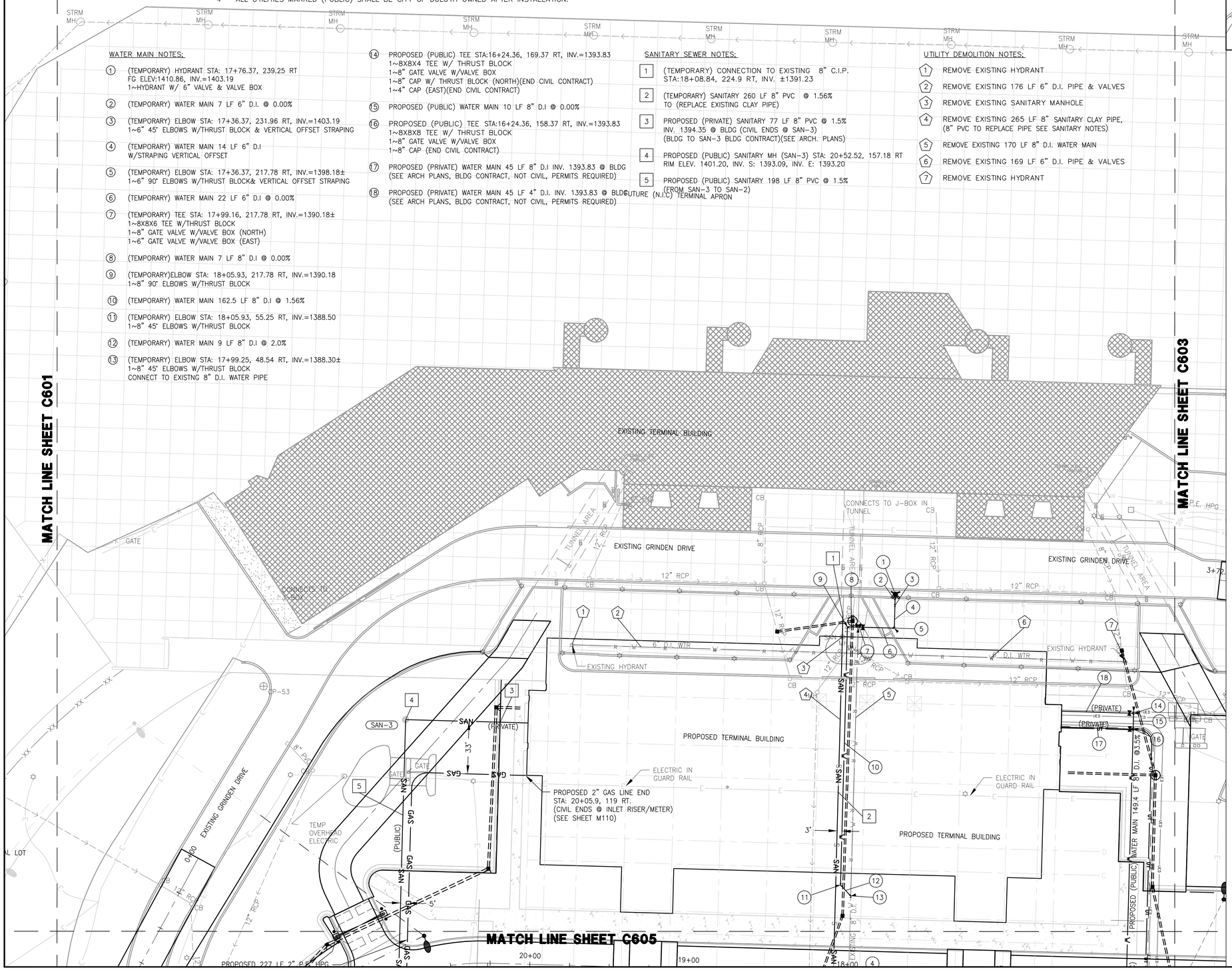
1. (TEMPORARY) HYDRANT STA: 17+76.37, 239.25 RT
FG ELEV:1410.86, INV.=1403.19
1~HYDRANT W/ 6" VALVE & VALVE BOX
2. (TEMPORARY) WATER MAIN 7 LF 6" D.I. @ 0.00%
3. (TEMPORARY) ELBOW STA: 17+36.37, 231.96 RT, INV.=1403.19
1~6" 45° ELBOWS W/THRUST BLOCK & VERTICAL OFFSET STRAPING
4. (TEMPORARY) WATER MAIN 14 LF 6" D.I
W/STRAPING VERTICAL OFFSET
5. (TEMPORARY) ELBOW STA: 17+36.37, 217.78 RT, INV.=1398.18±
1~6" 90° ELBOWS W/THRUST BLOCK& VERTICAL OFFSET STRAPING
6. (TEMPORARY) WATER MAIN 22 LF 6" D.I @ 0.00%
7. (TEMPORARY) TEE STA: 17+99.16, 217.78 RT, INV.=1390.18±
1~8X8X6 TEE W/THRUST BLOCK
1~8" GATE VALVE W/VALVE BOX (NORTH)
1~6" GATE VALVE W/VALVE BOX (EAST)
8. (TEMPORARY) WATER MAIN 7 LF 8" D.I @ 0.00%
9. (TEMPORARY)ELBOW STA: 18+05.93, 217.78 RT, INV.=1390.18
1~8" 90° ELBOWS W/THRUST BLOCK
10. (TEMPORARY) WATER MAIN 162.5 LF 8" D.I @ 1.56%
11. (TEMPORARY) ELBOW STA: 18+05.93, 55.25 RT, INV.=1388.50
1~8" 45° ELBOWS W/THRUST BLOCK
12. (TEMPORARY) WATER MAIN 9 LF 8" D.I @ 2.0%
13. (TEMPORARY) ELBOW STA: 17+99.25, 48.54 RT, INV.=1388.30±
1~8" 45° ELBOWS W/THRUST BLOCK
CONNECT TO EXISTNG 8" D.I. WATER PIPE
14. PROPOSED (PUBLIC) TEE STA:16+24.36, 169.37 RT, INV.=1393.83
1~8X8X4 TEE W/ THRUST BLOCK
1~8" GATE VALVE W/VALVE BOX
1~8" CAP W/ THRUST BLOCK (NORTH)(END CIVIL CONTRACT)
1~4" CAP (EAST)(END CIVIL CONTRACT)
15. PROPOSED (PUBLIC) WATER MAIN 10 LF 8" D.I @ 0.00%
16. PROPOSED (PUBLIC) TEE STA:16+24.36, 158.37 RT, INV.=1393.83
1~8X8X8 TEE W/ THRUST BLOCK
1~8" GATE VALVE W/VALVE BOX
1~8" CAP (END CIVIL CONTRACT)
17. PROPOSED (PRIVATE) WATER MAIN 45 LF 8" D.I INV. 1393.83 @ BLDG
(SEE ARCH PLANS, BLDG CONTRACT, NOT CIVIL, PERMITS REQUIRED)
18. PROPOSED (PRIVATE) WATER MAIN 45 LF 4" D.I. INV. 1393.83 @ BLDG
(SEE ARCH PLANS, BLDG CONTRACT, NOT CIVIL, PERMITS REQUIRED)

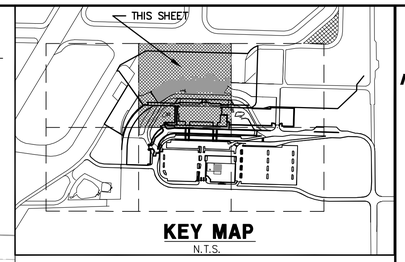
SANITARY SEWER NOTES:

1. (TEMPORARY) CONNECTION TO EXISTING 8" C.I.P.
STA:18+08.84, 224.9 RT, INV. ±1391.23
2. (TEMPORARY) SANITARY 260 LF 8" PVC @ 1.56%
TO (REPLACE EXISTING CLAY PIPE)
3. PROPOSED (PRIVATE) SANITARY 77 LF 8" PVC @ 1.5%
INV. 1394.35 @ BLDG (CIVIL ENDS @ SAN-3)
(BLDG TO SAN-3 BLDG CONTRACT)(SEE ARCH. PLANS)
4. PROPOSED (PUBLIC) SANITARY MH (SAN-3) STA: 20+52.52, 157.18 RT
RIM ELEV. 1401.20, INV. S: 1393.09, INV. E: 1393.20
5. PROPOSED (PUBLIC) SANITARY 198 LF 8" PVC @ 1.5%
(FROM SAN-3 TO SAN-2)
FUTURE (N.I.C) TERMINAL APRON

UTILITY DEMOLITION NOTES:

1. REMOVE EXISTING HYDRANT
2. REMOVE EXISTING 176 LF 6" D.I. PIPE & VALVES
3. REMOVE EXISTING SANITARY MANHOLE
4. REMOVE EXISTING 265 LF 8" SANITARY CLAY PIPE,
(8" PVC TO REPLACE PIPE SEE SANITARY NOTES)
5. REMOVE EXISTING 170 LF 8" D.I. WATER MAIN
6. REMOVE EXISTING 169 LF 6" D.I. PIPE & VALVES
7. REMOVE EXISTING HYDRANT





KEY MAP
N.T.S.

NORTH

0 30' 60'

LEGEND

- 2/C #6 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 4/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 2/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- UED — UED — PROPOSED CONDUIT DUCTS
- OHE — PROPOSED OVERHEAD ELECT.
- OE — OE — EXISTING OVERHEAD ELECT.
- EXISTING POWER POLE
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- EXISTING PARKING GATE
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- SAN EXISTING SANITARY MANHOLE
- PROPOSED SANITARY MANHOLE
- UG — UG — EXISTING GAS LINE
- GAS — GAS — PROPOSED GAS LINE
- EXISTING HYDRANT
- PROPOSED HYDRANT
- PROPOSED WATER VALVE
- WV EXISTING WATER VALVE
- PROPOSED STORM PIPE
- PROPOSED EDGE DRAINS
- EXISTING STORM PIPE

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SHEET TITLE

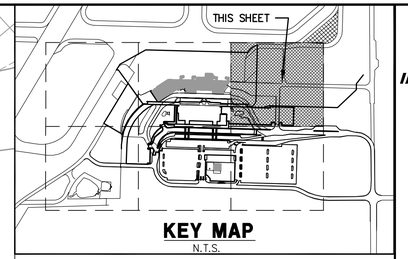
SITE UTILITY PLAN (SHEET 2 OF 6)

SHEET NUMBER
C602

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C602.dwg Plotted on: 3/31/2010 3:44 PM Plotted by: Dixon, Lukas

NOTE:
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KEY MAP
N.T.S.

NORTH

0 30' 60'

FUTURE (N.I.C) TERMINAL APRON

CP-54

MATCH LINE SHEET C602

EXISTING EMPLOYEE LOT

12" RCP

2" P.E. HPG

3+72.04

3+00

2+00

1+00

TEMPORARY ROAD (EAST)

PT = 1+11.29

8" RCP

12" RCP

GATE

GATE

GATE

CABLE 3000FR

PROPOSED EMPLOYEE LOT

PC = 0+00

EMPLOYEE PARKING ROAD

2" P.E. HPG

EXITING TERMINAL POWER (MP&L)

AFTER HP LOOPS

FIBER OPTIC

ABANDONED PRIMARY UC

DUCT 2~2"

DUCT 2~4"

DUCT 2~2"

DUCT 2~4"

(C) FP-15

(C) FP-16

(C) FP-15

(C) FP-16

MATCH LINE SHEET C606

LEGEND

- 2/C #6 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 4/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 2/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- UED — PROPOSED CONDUIT DUCTS
- OHE — PROPOSED OVERHEAD ELECT.
- OE — EXISTING OVERHEAD ELECT.
- EXISTING POWER POLE
- PROPOSED POWER POLE
- PROPOSED ELECT. MANHOLE
- PROPOSED LIGHT POLES
- T — PROPOSED PHONE PEDESTAL
- PROPOSED COMM MANHOLE
- UE — EXISTING UNDERGROUND ELECT.
- E — EXISTING –PRIVATE– ELECT.
- EXISTING LIGHT & POLE
- UT — PROPOSED PHONE CABLES
- UT — EXISTING PHONE CABLES
- UTV — EXISTING CATV CABLES
- FO — EXISTING FIBER OPTIC CABLE
- EXISTING PARKING GATE
- EXISTING ELECT. MANHOLE
- W — PROPOSED WATERMAIN
- W — EXISTING WATERMAIN
- S — EXISTING SANITARY
- SAN — PROPOSED SANITARY
- SAN — EXISTING SANITARY MANHOLE
- PROPOSED SANITARY MANHOLE
- UG — EXISTING GAS LINE
- GAS — PROPOSED GAS LINE
- EXISTING HYDRANT
- PROPOSED HYDRANT
- PROPOSED WATER VALVE
- WV — EXISTING WATER VALVE
- PROPOSED STORM PIPE
- PROPOSED EDGE DRAINS
- EXISTING STORM PIPE

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DULUTH AIRPORT AUTHORITY

DULUTH INTERNATIONAL AIRPORT DULUTH, MN

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2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

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Print Name: JOHN E. HIPPCHEN

Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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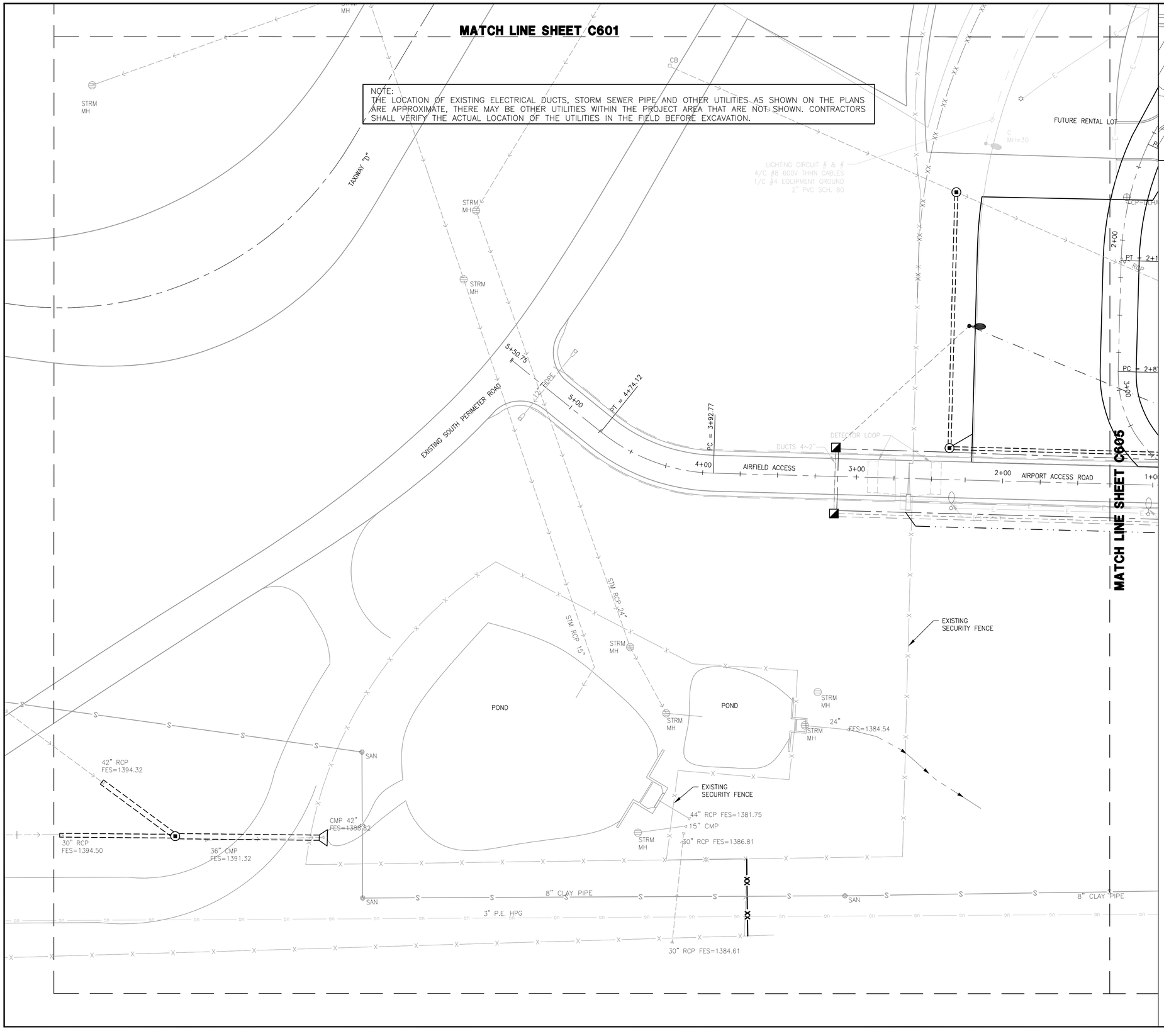
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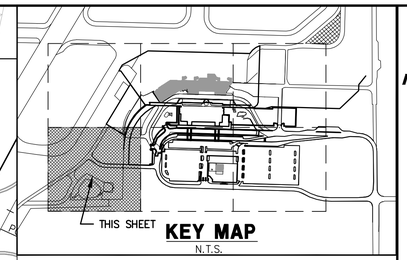
SITE UTILITY PLAN (SHEET 3 OF 6)

SHEET NUMBER
C603

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C603.dwg Plotted on: 3/31/2010 3:58 PM Plotted by: Dixon, Lukas





KEY MAP
N.T.S.

NORTH

0 30' 60'

LEGEND

- 2/C #6 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 4/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 2/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- PROPOSED CONDUIT DUCTS
- PROPOSED OVERHEAD ELECT.
- EXISTING OVERHEAD ELECT.
- EXISTING POWER POLE
- PROPOSED POWER POLE
- PROPOSED ELECT. MANHOLE
- PROPOSED LIGHT POLES
- PROPOSED PHONE PEDESTAL
- PROPOSED COMM MANHOLE
- EXISTING UNDERGROUND ELECT.
- EXISTING –PRIVATE– ELECT.
- EXISTING LIGHT & POLE
- PROPOSED PHONE CABLES
- EXISTING PHONE CABLES
- EXISTING CATV CABLES
- EXISTING FIBER OPTIC CABLE
- EXISTING PARKING GATE
- EXISTING ELECT. MANHOLE
- PROPOSED WATERMAIN
- EXISTING WATERMAIN
- EXISTING SANITARY
- PROPOSED SANITARY
- EXISTING SANITARY MANHOLE
- PROPOSED SANITARY MANHOLE
- EXISTING GAS LINE
- PROPOSED GAS LINE
- EXISTING HYDRANT
- PROPOSED HYDRANT
- PROPOSED WATER VALVE
- EXISTING WATER VALVE
- PROPOSED STORM PIPE
- PROPOSED EDGE DRAINS
- EXISTING STORM PIPE

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Signature: John E Hippchen

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REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

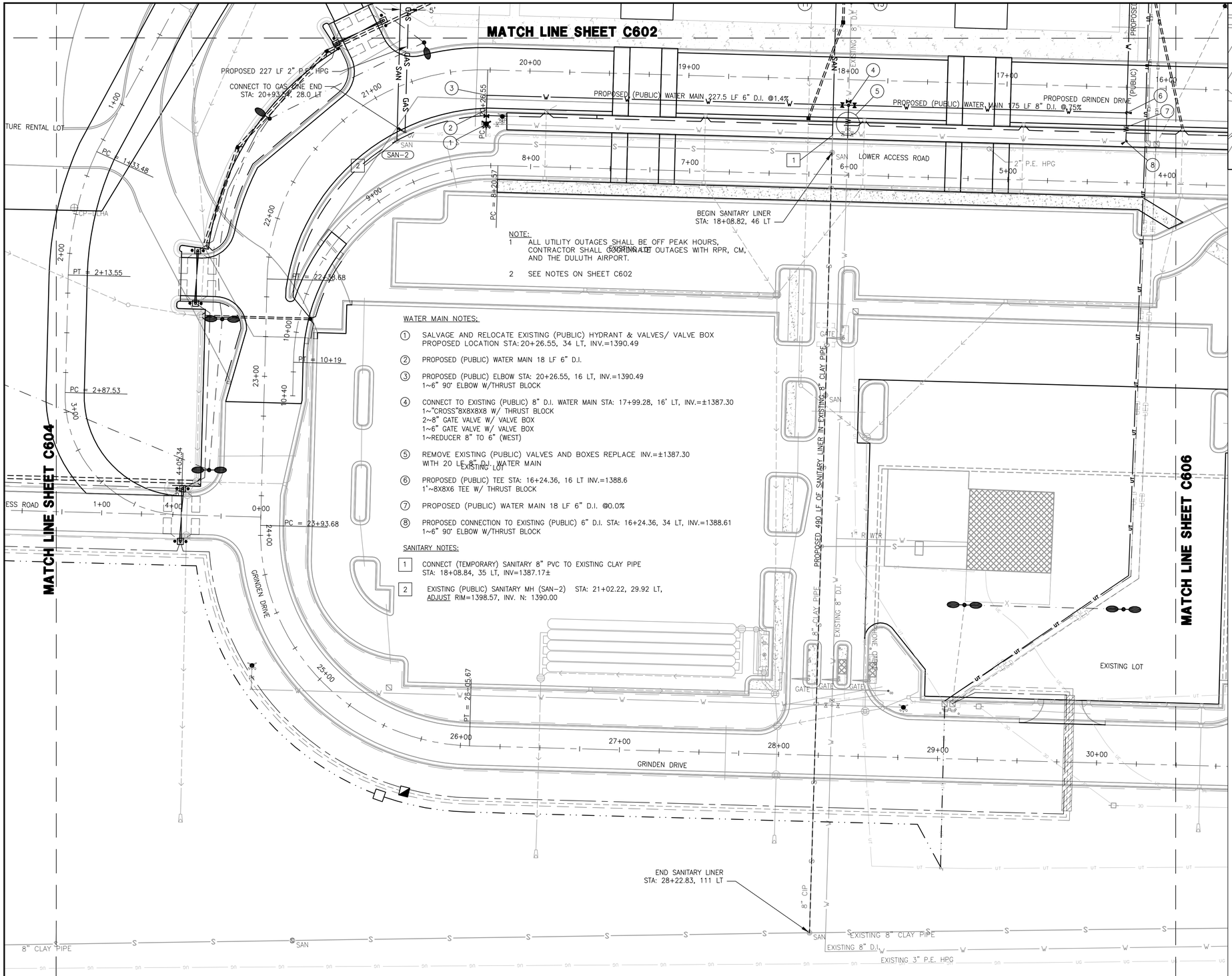
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SHEET TITLE

SITE UTILITY PLAN (SHEET 4 OF 6)

SHEET NUMBER
C604

90% NOT FOR CONSTRUCTION



NOTE:
1 ALL UTILITY OUTAGES SHALL BE OFF PEAK HOURS, CONTRACTOR SHALL COORDINATE OUTAGES WITH RPR, CM, AND THE DULUTH AIRPORT.

2 SEE NOTES ON SHEET C602

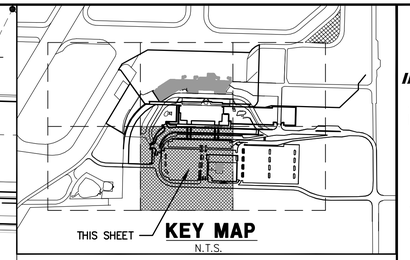
WATER MAIN NOTES:

1. SALVAGE AND RELOCATE EXISTING (PUBLIC) HYDRANT & VALVES/ VALVE BOX PROPOSED LOCATION STA: 20+26.55, 34 LT, INV.=1390.49
2. PROPOSED (PUBLIC) WATER MAIN 18 LF 6" D.I.
3. PROPOSED (PUBLIC) ELBOW STA: 20+26.55, 16 LT, INV.=1390.49
   1~6" 90° ELBOW W/THRUST BLOCK
4. CONNECT TO EXISTING (PUBLIC) 8" D.I. WATER MAIN STA: 17+99.28, 16' LT, INV.=±1387.30
   1~"CROSS"8X8X8X8 W/ THRUST BLOCK
   2~8" GATE VALVE W/ VALVE BOX
   1~6" GATE VALVE W/ VALVE BOX
   1~REDUCER 8" TO 6" (WEST)
5. REMOVE EXISTING (PUBLIC) VALVES AND BOXES REPLACE INV.=±1387.30 WITH 20 LF 8" D.I. WATER MAIN
6. PROPOSED (PUBLIC) TEE STA: 16+24.36, 16 LT INV.=1388.6
   1~8X8X6 TEE W/ THRUST BLOCK
7. PROPOSED (PUBLIC) WATER MAIN 18 LF 6" D.I. @0.0%
8. PROPOSED CONNECTION TO EXISTING (PUBLIC) 6" D.I. STA: 16+24.36, 34 LT, INV.=1388.61
   1~6" 90° ELBOW W/THRUST BLOCK

SANITARY NOTES:

1. CONNECT (TEMPORARY) SANITARY 8" PVC TO EXISTING CLAY PIPE STA: 18+08.84, 35 LT, INV=1387.17±
2. EXISTING (PUBLIC) SANITARY MH (SAN-2) STA: 21+02.22, 29.92 LT, ADJUST RIM=1398.57, INV. N: 1390.00

NOTE:
THE LOCATION OF EXISTING ELECTRICAL DUCTS, STORM SEWER PIPE AND OTHER UTILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE, THERE MAY BE OTHER UTILITIES WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. CONTRACTORS SHALL VERIFY THE ACTUAL LOCATION OF THE UTILITIES IN THE FIELD BEFORE EXCAVATION.



NORTH

0 30' 60'

LEGEND

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- 2/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
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- PROPOSED LIGHT POLES
- T PROPOSED PHONE PEDESTAL
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- EXISTING LIGHT & POLE
- UT — UT — PROPOSED PHONE CABLES
- UT — UT — EXISTING PHONE CABLES
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- FO — FO — EXISTING FIBER OPTIC CABLE
- EXISTING PARKING GATE
- EXISTING ELECT. MANHOLE
- W — PROPOSED WATERMAIN
- W — EXISTING WATERMAIN
- S — EXISTING SANITARY
- SAN — PROPOSED SANITARY
- SAN EXISTING SANITARY MANHOLE
- PROPOSED SANITARY MANHOLE
- UG — UG — EXISTING GAS LINE
- GAS — GAS — PROPOSED GAS LINE
- EXISTING HYDRANT
- PROPOSED HYDRANT
- PROPOSED WATER VALVE
- WV EXISTING WATER VALVE
- PROPOSED STORM PIPE
- PROPOSED EDGE DRAINS
- EXISTING STORM PIPE

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SHEET TITLE

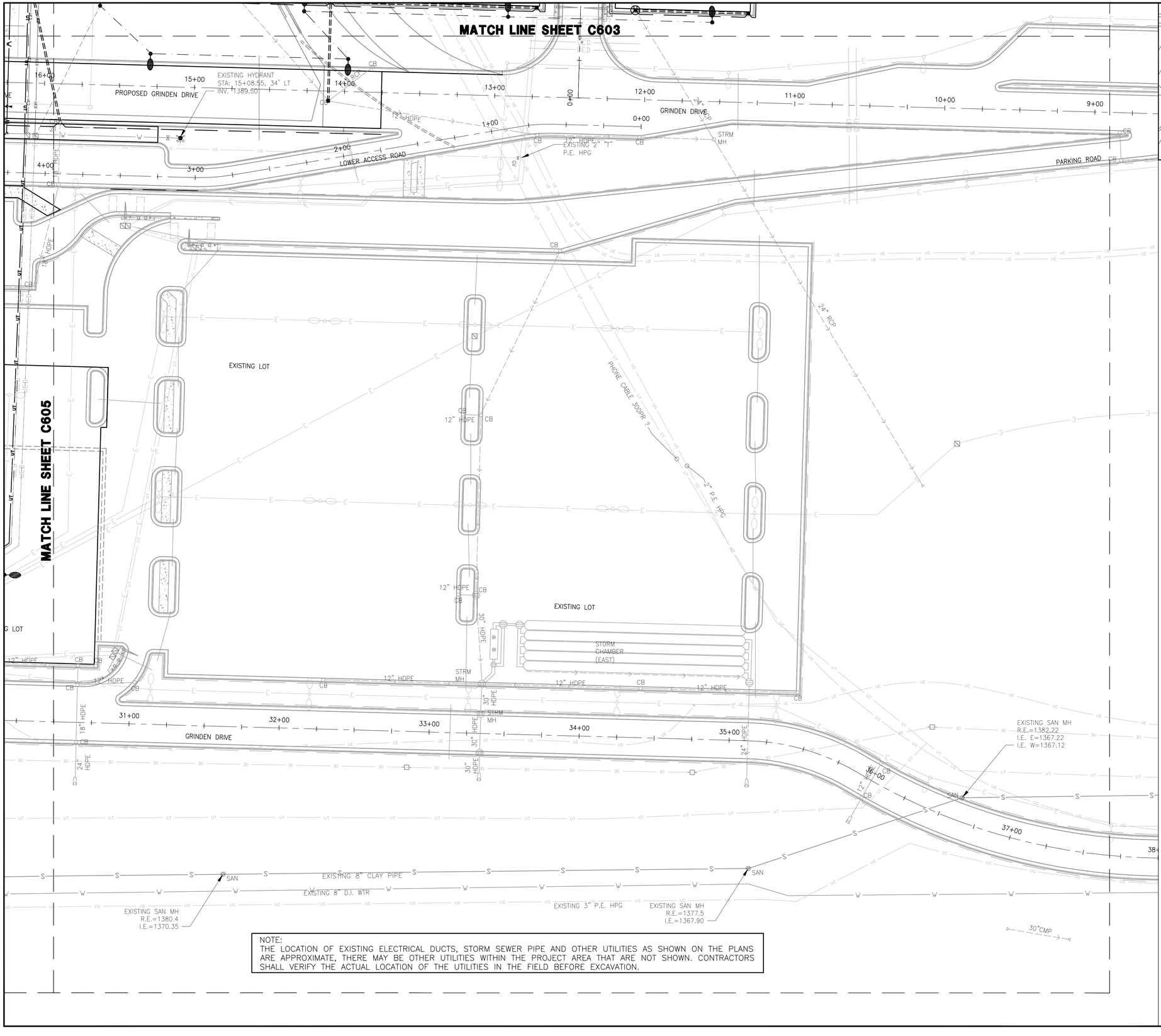
SITE UTILITY PLAN (SHEET 5 OF 6)

SHEET NUMBER

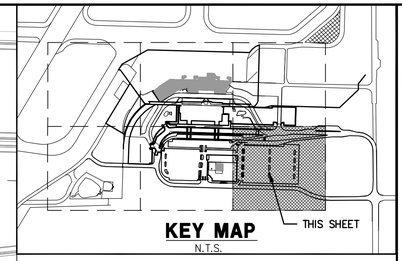
C605

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C605.dwg Plotted on: 3/31/2010 4:48 PM Plotted by: Dixon, Lukas



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KEY MAP
N.T.S.

NORTH

0 30' 60'

LEGEND

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- 4/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 2/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
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- PROPOSED POWER POLE
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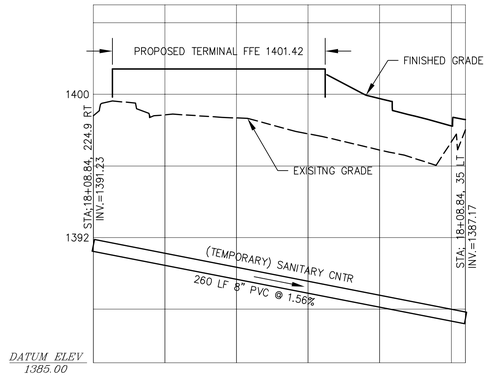
SHEET TITLE

SITE UTILITY PLAN (SHEET 6 OF 6)

SHEET NUMBER
C606

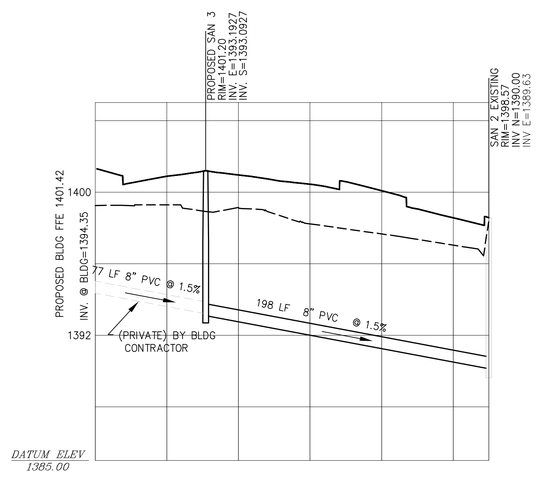
90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C606.dwg Plotted on: 3/31/2010 4:55 PM Plotted by: Dixon, Lukas



NOTE:

PROVIDE TEMPORARY BYPASS AS NECESSARY FOR CONSTRUCTION OF SANITARY MANHOLE (_____) THIS WORK SHALL BE CONSIDERED INCIDENTAL.





HORIZ. SCALE: 1"= 50'

50' 25' 0 50'

VERT. SCALE: 1"= 4'

4' 2' 0 4'

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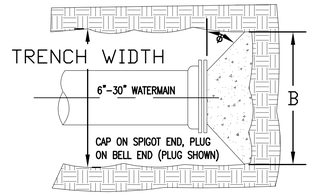
SHEET TITLE

SANITARY PROFILE

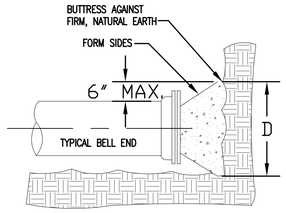
SHEET NUMBER

C607

90% NOT FOR CONSTRUCTION



PLAN

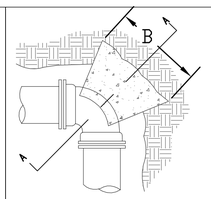


ELEVATION

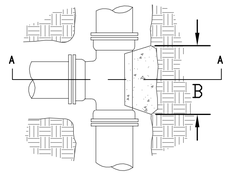
BLOCKING DIMENSIONS		
PLUG SIZE	B	D
6"	12"	15"
8"	24"	15"
10"	24"	20"
12"	30"	22"
16"	40"	28"
20"	50"	34"
24"	62"	40"
30"	80"	48"

NOTES:
1. BLOCKING DIMENSIONS BASED ON EARTH RESISTANCE OF 2 TONS PER SQ. FT. WHERE, IN THE OPINION OF THE ENGINEER, EARTH IS POOR, BLOCKING SHALL BE INCREASED IN SIZE AS DIRECTED OR STRAPPING MAY BE NECESSARY.
2. ANGLE⌀ SHALL BE EQUAL TO OR LARGER THAN 45°.
3. BLOCKING SHALL BE CENTERED ON MAIN.
4. CONCRETE SHALL BE TYPE 3, GRADE B – MNDOT 2461.
5. POLYETHYLENE SHALL BE USED TO SEPARATE CONCRETE FROM FITTING.

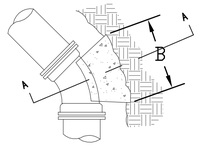
PLUG BLOCKING FOR WATERMAIN		W–2
REVISED/APPROVED 3/11/09	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



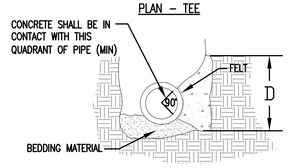
PLAN – 90° BEND



PLAN – TEE



PLAN – 45° BEND

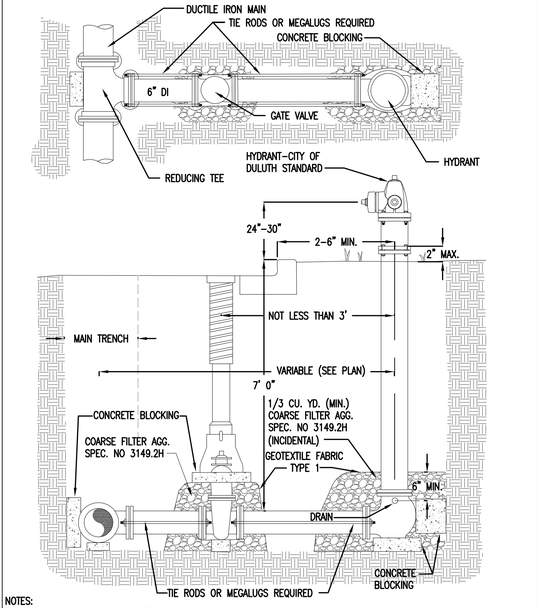


SECTION A–A

NOTES
1. DIMENSIONS IN TABLE ARE BASED ON A WATER PRESSURE OF 150 P.S.I. & AN EARTH RESISTANCE OF 2 TONS/S.F.
2. BLOCKING TO BE SET AGAINST UNDISTURBED SOIL
3. CONCRETE SHALL BE TYPE 3 GRADE B. (MNDOT SPEC. 2461) CONCRETE SHALL NOT INTERFERE WITH MECHANICAL JOINTS
4. POLYETHYLENE SHALL BE USED TO SEPARATE CONCRETE FROM FITTING.

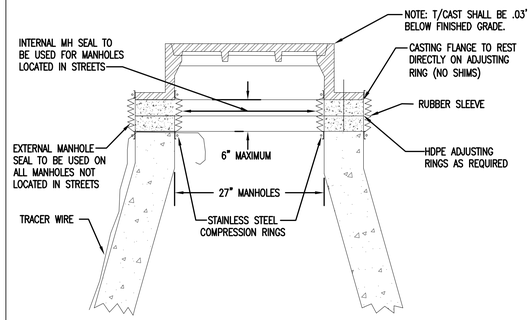
BLOCKING DIMENSIONS								
BEND OR BRANCH SIZE	22-1/2" BENDS		45° BENDS		90° BENDS		TEES	
	B	D	B	D	B	D	B	D
0'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-4"	1'-2"	1'-3"	1'-0"
0'-8"	1'-0"	1'-0"	1'-4"	1'-2"	1'-10"	1'-6"	1'-6"	1'-4"
1'-0"	1'-4"	1'-4"	1'-10"	1'-10"	2'-8"	2'-3"	2'-3"	2'-0"
1'-4"	1'-10"	1'-8"	2'-6"	2'-4"	3'-10"	2'-10"	3'-2"	2'-4"
1'-8"	2'-4"	2'-0"	3'-3"	2'-10"	5'-0"	3'-4"	4'-0"	3'-0"
2'-0"	2'-10"	2'-4"	4'-0"	3'-3"	6'-4"	3'-10"	5'-3"	3'-4"
2'-6"	3'-6"	3'-0"	5'-4"	3'-10"	8'-0"	4'-8"	6'-3"	4'-3"

THRUST BLOCKING FOR WATERMAIN		W–3
REVISED/APPROVED 3/11/09	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



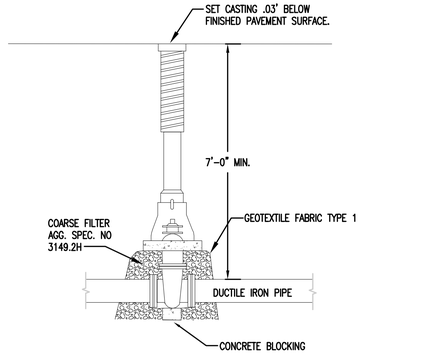
NOTES:
1. VALVES SHALL BE CONNECTED DIRECTLY TO AN ANCHORING TEE. WHENEVER DIRECT CONNECTION IS NOT POSSIBLE, TIE RODS OR MEGALUGS SHALL BE USED. TIE RODS SHALL BE GALVANIZED.
2. USE EPOXY COATING ON VALVE AND HYDRANT BASE.
3. ALL BOLTS SHALL BE COR–TEN WITH ZINC ANODE CAPS CONFORMING TO ASTM B–418 FOR ALL MECHANICAL JOINT FITTINGS. ANODE SIZE – REGULAR.

FIRE HYDRANT SETTING DETAIL – DUCTILE IRON		W–4
REVISED/APPROVED 3/11/09	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



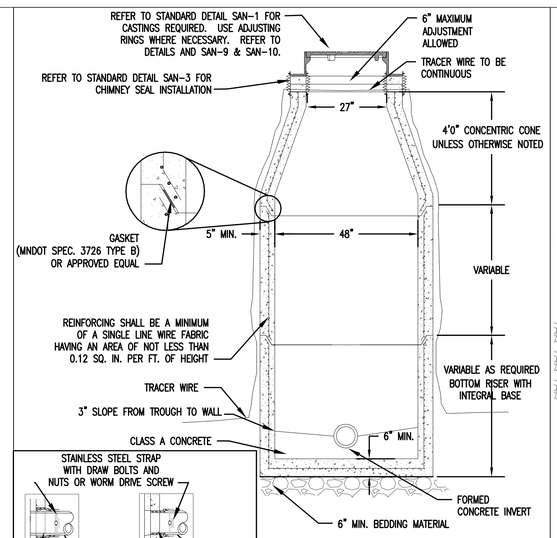
NOTE:
1. ALL SEALS SHALL EXTEND FROM THE CASTING TO THE CONE
2. TRACER WIRE REQUIRED ON ALL SANITARY SEWER MAINS

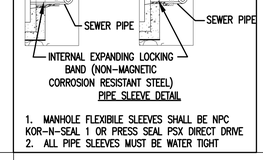
SANITARY MANHOLE SEAL		SAN–3
REVISED/APPROVED 3/11/09	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



NOTES:
1. USE EPOXY COATING ON EXTERIOR OF VALVES
2. ALL BOLTS SHALL BE COR–TEN WITH ZINC ANODE CAPS CONFORMING TO ASTM B–418 FOR ALL MECHANICAL JOINT FITTINGS. ANODE SIZE – REGULAR.

WATER VALVE BOX – DUCTILE IRON MAIN		W–17
REVISED/APPROVED 3/11/09	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



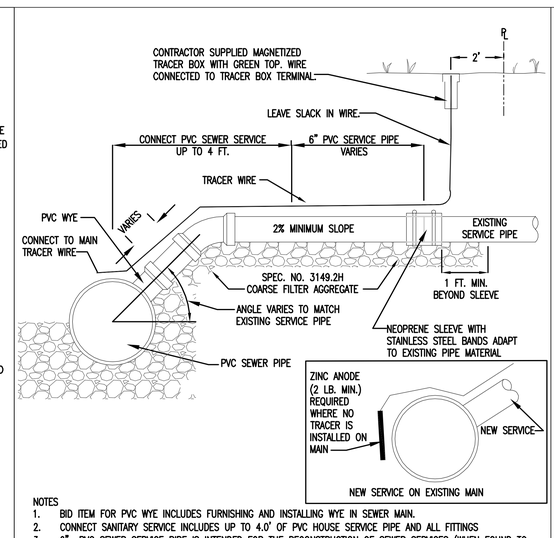


PIPE SLEEVE DETAIL

1. MANHOLE FLEXIBLE SLEEVES SHALL BE NPC KOR–N–SEAL 1 OR PRESS SEAL PSX DIRECT DRIVE
2. ALL PIPE SLEEVES MUST BE WATER TIGHT

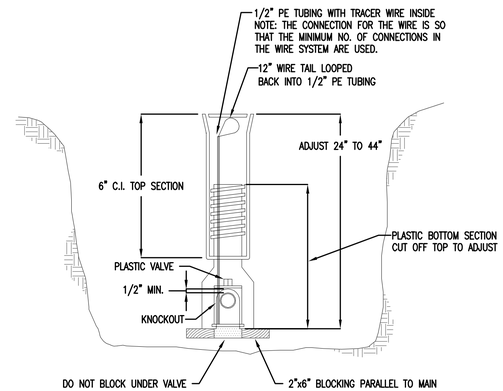
NOTES
1. SANITARY MANHOLES SHALL NOT HAVE STEPS.
2. ALL SANITARY MANHOLES SHALL BE VACUUM TESTED.
3. ALL SANITARY MANHOLES SHALL BE WATERTIGHT.
ANY OBSERVABLE WATER SEEPAGE THROUGH THE END OF THE WARRANTY PERIOD SHALL BE CAUSE TO REJECT MANHOLES.

PRECAST MECHANICAL JOINT SEWER MANHOLE		SAN–11
REVIEWED/APPROVED 12/18/09	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



NOTES
1. BID ITEM FOR PVC WYE INCLUDES FURNISHING AND INSTALLING WYE IN SEWER MAIN.
2. CONNECT SANITARY SERVICE INCLUDES UP TO 4.0' OF PVC HOUSE SERVICE PIPE AND ALL FITTINGS
3. 6" PVC SEWER SERVICE PIPE IS INTENDED FOR THE RECONSTRUCTION OF SEWER SERVICES (WHEN FOUND TO BE IN NEED BY THE ENGINEER) COMPLETE IN PLACE FROM 4.0' BEYOND THE C/L OF THE SEWER MAIN TO A POINT DESIGNATED BY THE ENGINEER
4. FOR NEW SERVICES, PIPE TO STOP AT RIGHT OF WAY
5. #12 GAUGE GREEN INSULATED COPPER TRACER WIRE SHALL BE INSTALLED WITH SANITARY SEWER MAINS AND SERVICES. TRACER WIRE TERMINAL BOXES SHALL BE INSTALLED DIRECTLY ABOVE THE SEWER SERVICE OR AS DETERMINED BY THE ENGINEER
6. FOR SERVICES, TRACER WIRE SHALL RUN FROM THE WYE AND TERMINATE IN A FLUSH MOUNTED TRACER BOX WITH A GREEN CAST IRON LOCKABLE TOP.
7. THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. SPLICES IN THE TRACER WIRE SHOULD BE MADE WITH SPLIT BOLT OR COMPRESSION TYPE CONNECTORS. WIRE NUTS SHALL NOT BE USED. A WATER–PROOF CONNECTION IS NECESSARY TO PREVENT CORROSION.

TYPICAL SEWER SERVICE CONNECTION		SAN–2
REVISED/APPROVED 3/11/09	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



PE VALVE BOX SETTING		G–5
REVIEWED/APPROVED 3/11/09	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE

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Landscaping Consultants:
APPOLD DESIGN
2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: JOHN E. HIPPCHEN

Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

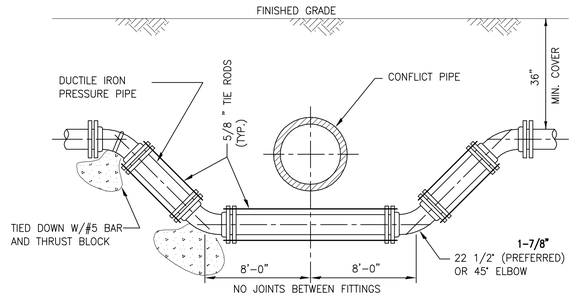
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SHEET TITLE
UTILITY CITY OF DULUTH DETAILS (SHEET 1 OF 2)

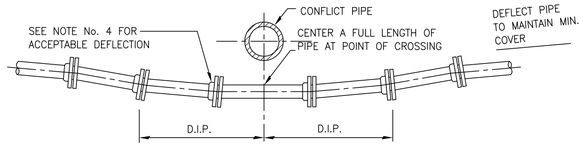
SHEET NUMBER
C608

90% NOT FOR CONSTRUCTION

Drawing: T:\P\213882.099 DLH Terminal Design Phase 2\CAD\C\DLH–C608.dwg Plotted on: 3/31/2010 5:02 PM Plotted by: Dixon, Lukas



FITTING TYPE



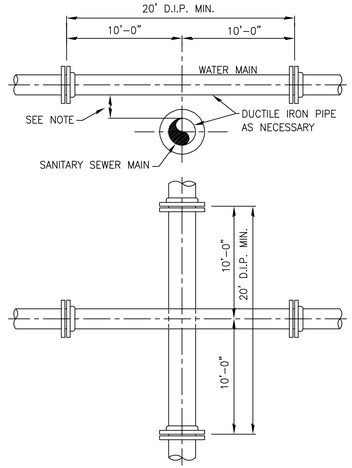
DEFLECTION TYPE

NOTES:

1. THERE SHALL BE IN ALL CASES A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN WATER MAINS AND FORCE MAINS.
2. WHEREVER POSSIBLE WATER MAINS SHALL PASS OVER FORCE MAINS OR STORM SEWERS.
3. FITTINGS SHALL BE RESTRAINED WITH RETAINER GLANDS AND EITHER THRUST BLOCKS OR TIE RODS.
4. THE DEFLECTION TYPE CROSSING IS PREFERRED.
5. DO NOT EXCEED 75% OF MANUFACTURERS RECOMMENDED MAXIMUM JOINT DEFLECTION.
6. A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN WATER MAINS AND STORM SEWERS SHALL BE MAINTAINED, WHERE THIS IS NOT POSSIBLE WATER MAIN SHALL BE D.I.P. WITH NO LESS THAN 6" SEPARATION.

CONFLICT SEPARATION DETAIL

N.T.S.

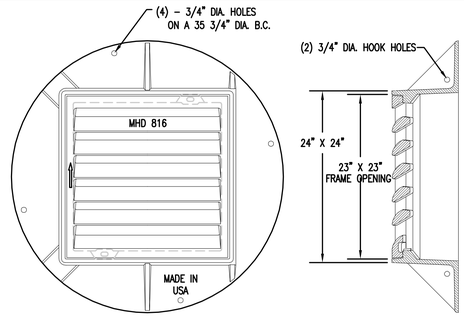


NOTES

1. SEWER CROSSING UNDER WATER MAINS SHALL BE POSITIONED TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER PIPE JOINTS AND WATER MAIN JOINTS ARE EQUALLY SPACED FROM THE POINT OF CROSSING WITH NO LESS THAN 10 FEET BETWEEN ANY TWO JOINTS AND BOTH PIPES SHALL BE D.I.P. WHERE THERE IS NO ALTERNATIVE TO SEWER PIPES CROSSING OVER A WATER MAIN, THE CRITERIA FOR MINIMUM SEPARATION BETWEEN LINES AND JOINTS IN THE ABOVE SHALL BE REQUIRED AND BOTH PIPES BE D.I.P. IRRESPECTIVE OF SEPARATION.
2. MAINTAIN 10 FEET HORIZONTAL DISTANCE BETWEEN WATER AND SEWER MAINS AS A MINIMUM.
3. FORCE MAIN CROSSING WATER MAIN SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE OUTSIDE OF THE FORCE MAIN AND THE OUTSIDE OF THE WATER MAIN WITH WATER MAIN CROSSING OVER FORCE MAIN.

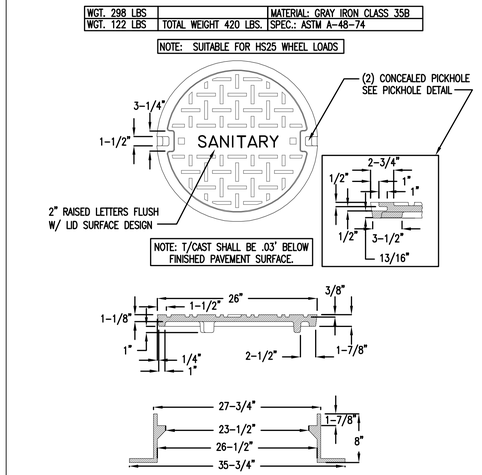
WATER/SEWER SEPARATION DETAIL

N.T.S.

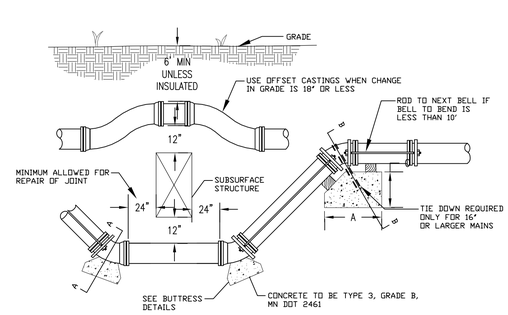


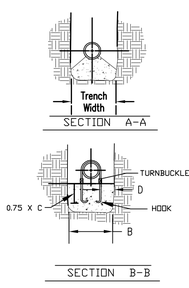
NOTES:
- COMPONENT NO'S: TOP FRAME 5005, GRATE 816 (STD PLATE 4154B).
- MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
- WEIGHT: FRAME 262#; GRATE 131#

CATCH BASIN/CURB BOX CASTINGS		STRM-3
REVIEWED/APPROVED 3/11/09	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



SANITARY CASTING DETAIL		SAN-1
REVIEWED/APPROVED 3/11/09	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE





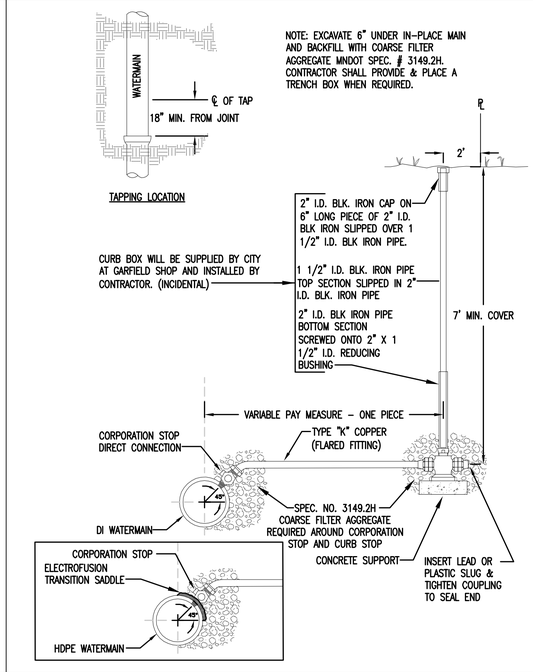
1. TIE RODS, BOLTS, NUTS, BANDS, AND WASHERS TO BE FURNISHED BY THE CONTRACTOR AND INSTALLED BY CONTRACTOR. ALL STEEL MATERIAL TO BE THOROUGHLY COATED WITH BITUMASTIC EQUAL TO KOPPERS NO. 505.
2. STRAPPING MATERIAL:

NO. RODS	2 PER TIE
DIA. RODS	1 INCH
STRAP SIZE	1/2" X 2"
BOLT DIA.	3/4 INCH
WASHER SIZE	1/2" X 3" X 5"

3. OFFSETS FOR 16" WATER MAIN AND LARGER, TIE DOWNS SHALL BE INSTALLED AS SHOWN. TURNBUCKLE AND BLOCK SIZES:

PIPE SIZE	A	B	C	D
16"	6.0'	2.5'	3.0'	1"
20"	8.0'	3.0'	3.0'	1 1/4"
24"	8.0'	3.0'	5.0'	1 1/2"
30"	8.0'	5.0'	5.0'	2"

STRAPPING WATER MAIN VERTICAL OFFSETS		W-6
REVIEWED / APPROVED 1/20/05	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	



TYPICAL COPPER WATER SERVICE		W-5
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NEW TERMINAL DESIGN

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Landscaping Consultants:
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TEL: (218) 591-5079

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: JOHN E. HIPPCHEN

Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
UTILITY CITY OF DULUTH DETAILS (SHEET 2 OF 2)

SHEET NUMBER
C609

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C609.dwg Plotted on: 3/31/2010 5:04 PM Plotted by: Dixon, Lukas

PAVEMENT MARKING AND SIGNAGE NOTES

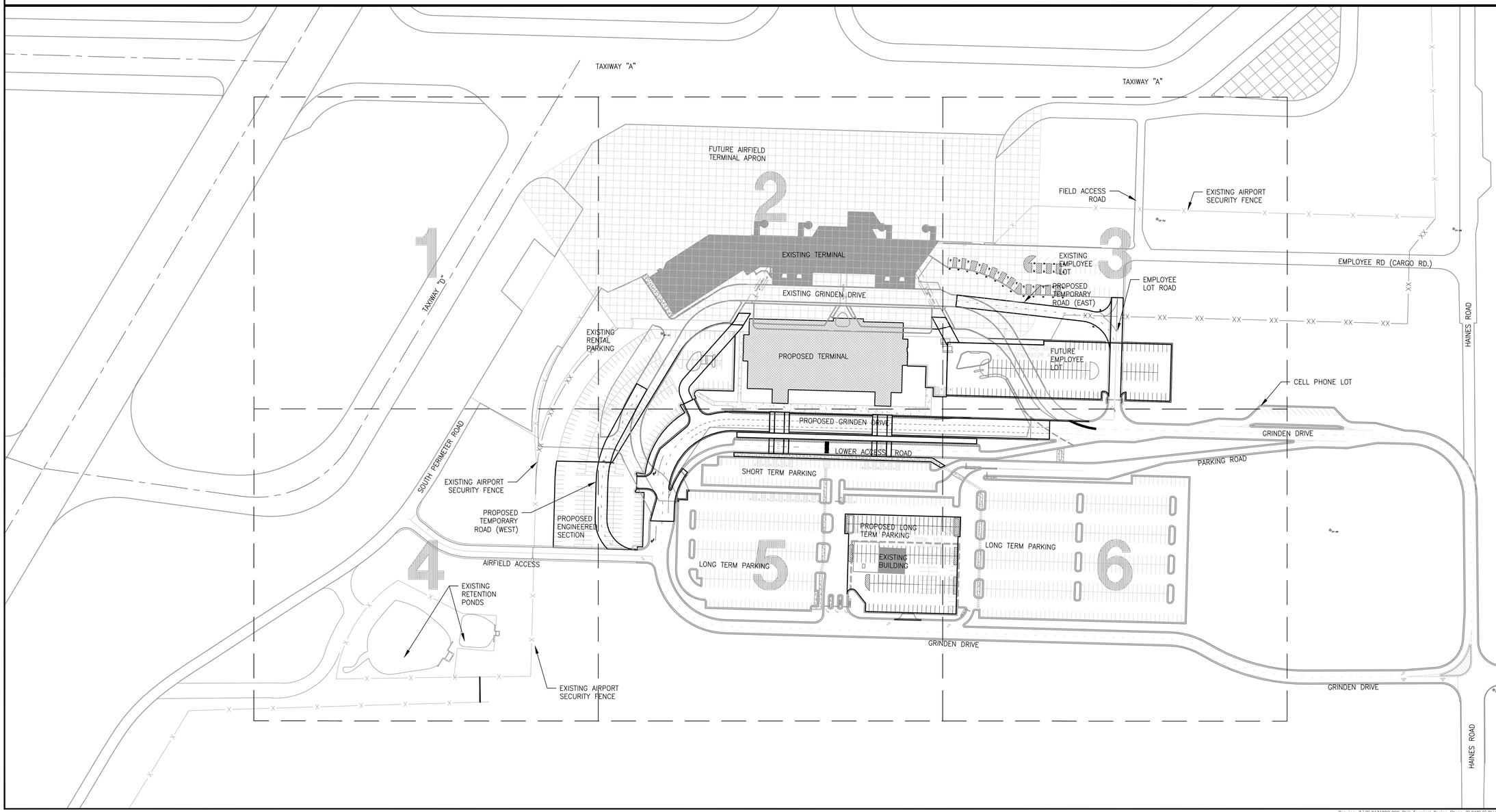
1. ALL SIGNS, PAVEMENT MARKINGS, AND TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES – UPDATED MARCH 31, 2009.
2. THE BID ITEM FOR ALL SIGNS SHALL INCLUDE THE COST OF ALL MATERIALS AND LABOR USED TO INSTALL NEW SIGNS PER THE NEW SIGN INSTALLATION DETAIL, SHEET C709.
3. ALL PAINT SHALL BE LATEX WITH TYPE 2 REFLECTIVE GLASS BEADS CONFORMING TO MNDOT 2582. MANUFACTURERS CERTIFICATION TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE USE ON THE PROJECT.
4. TEMPORARY PAVEMENT MARKING PLACEMENT AND REMOVAL ASSOCIATED WITH PHASING SHALL BE PAID FOR UNDER THE BID ITEM MNDOT 2563.601 TRAFFIC CONTROL.
5. SIGNS LOCATED IN CONCRETE MEDIANS SHALL BE CORED AFTER THE CONCRETE IS PLACED. THE CORE SHALL BE 4" IN DIAMETER TO ALLOW ROOM FOR THE SIGN POST TO BE DRIVEN. AFTER DRIVING THE SIGN POST, THE CORE IS TO BE BACKFILLED WITH GRANULAR MATERIAL. CORING CONCRETE FOR SIGN POST IS INCIDENTAL TO INSTALLING SIGN.

LEGEND

- PEDESTRIAN CROSSWALK PAVEMENT MARKINGS
- 4" WIDE PAVEMENT MARKINGS
- DIRECTIONAL ARROW
- STOP BAR PAVEMENT MARKING
- SIGN COMPLETE W/ POST
- EXISTING PAVEMENT MARKINGS (TYPICAL)

NORTH

0 100' 200'



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Signature: John E Hippchen

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DATE ISSUED: 03-29-2010
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DESIGNED BY: JEH

AEP PROJECT NUMBER
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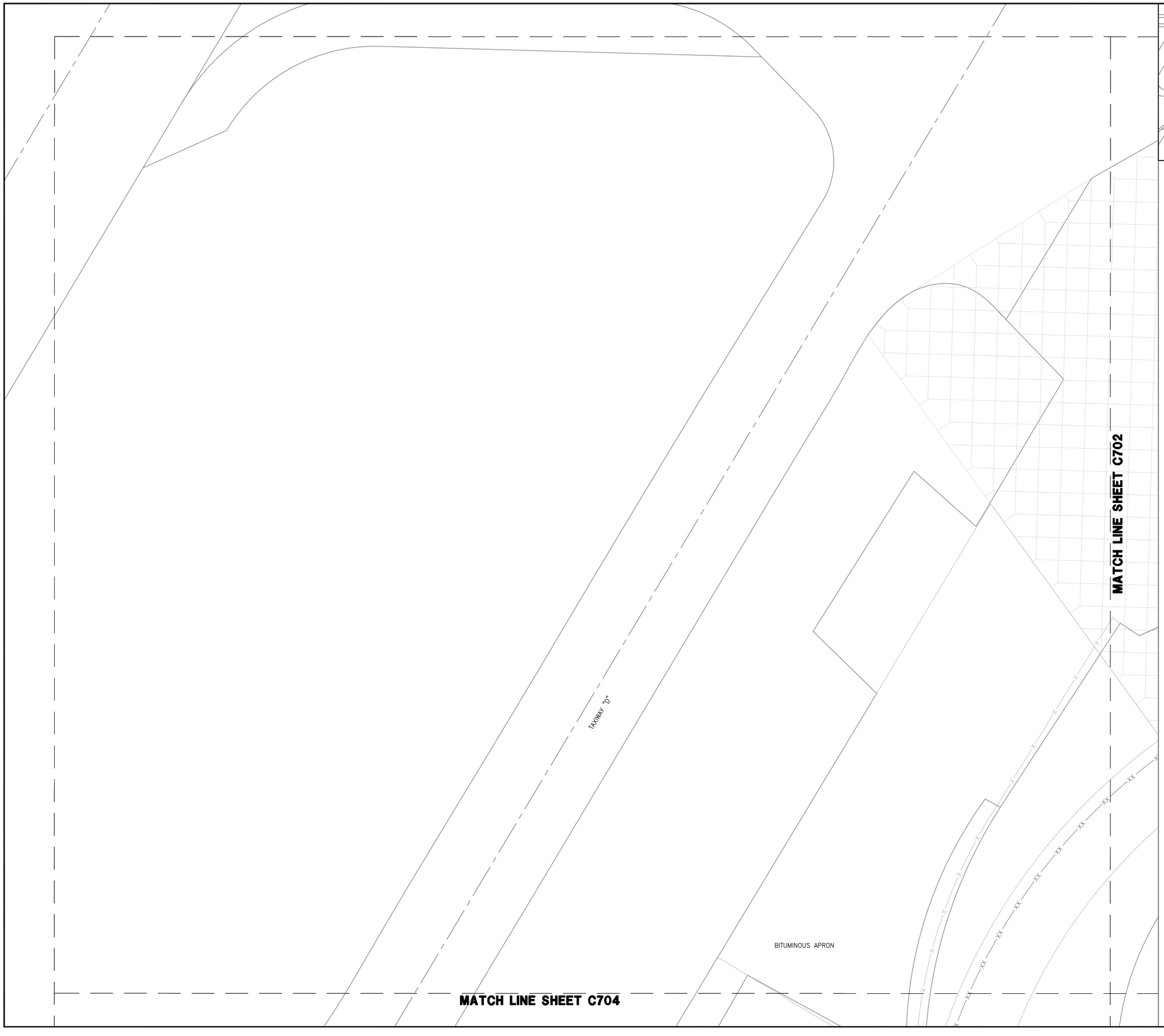
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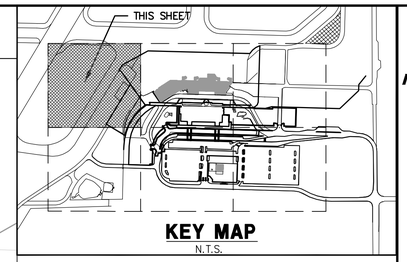
SHEET TITLE
PAVEMENT MARKING AND SIGNAGE OVERALL SITE PLAN

SHEET NUMBER
C700

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C700.dwg Plotted on: 4/1/2010 1:38 PM Plotted by: Dixon, Lukas





KEY MAP
N.T.S.

NORTH

0 30' 60'

LEGEND

- PEDESTRIAN CROSSWALK PAVEMENT MARKINGS
- 4" WIDE PAVEMENT MARKINGS
- DIRECTIONAL ARROW
- STOP BAR PAVEMENT MARKING
- SIGN COMPLETE W/ POST – TYPE AS NOTED
- FUTURE PAVEMENT MARKINGS (TYPICAL)

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DULUTH AIRPORT AUTHORITY

DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW TERMINAL DESIGN

CONSULTANTS

Interior Architects:
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TEL: (218) 724-8578 / FAX: (218) 724-8717

Structural Engineers:
MBJ CONSULTING ENG.
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Landscaping Consultants:
APPOLD DESIGN
2432 East First Street, Duluth MN 55812
TEL: (218) 591-5079

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: JOHN E. HIPPCHEN

Signature: John E. Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

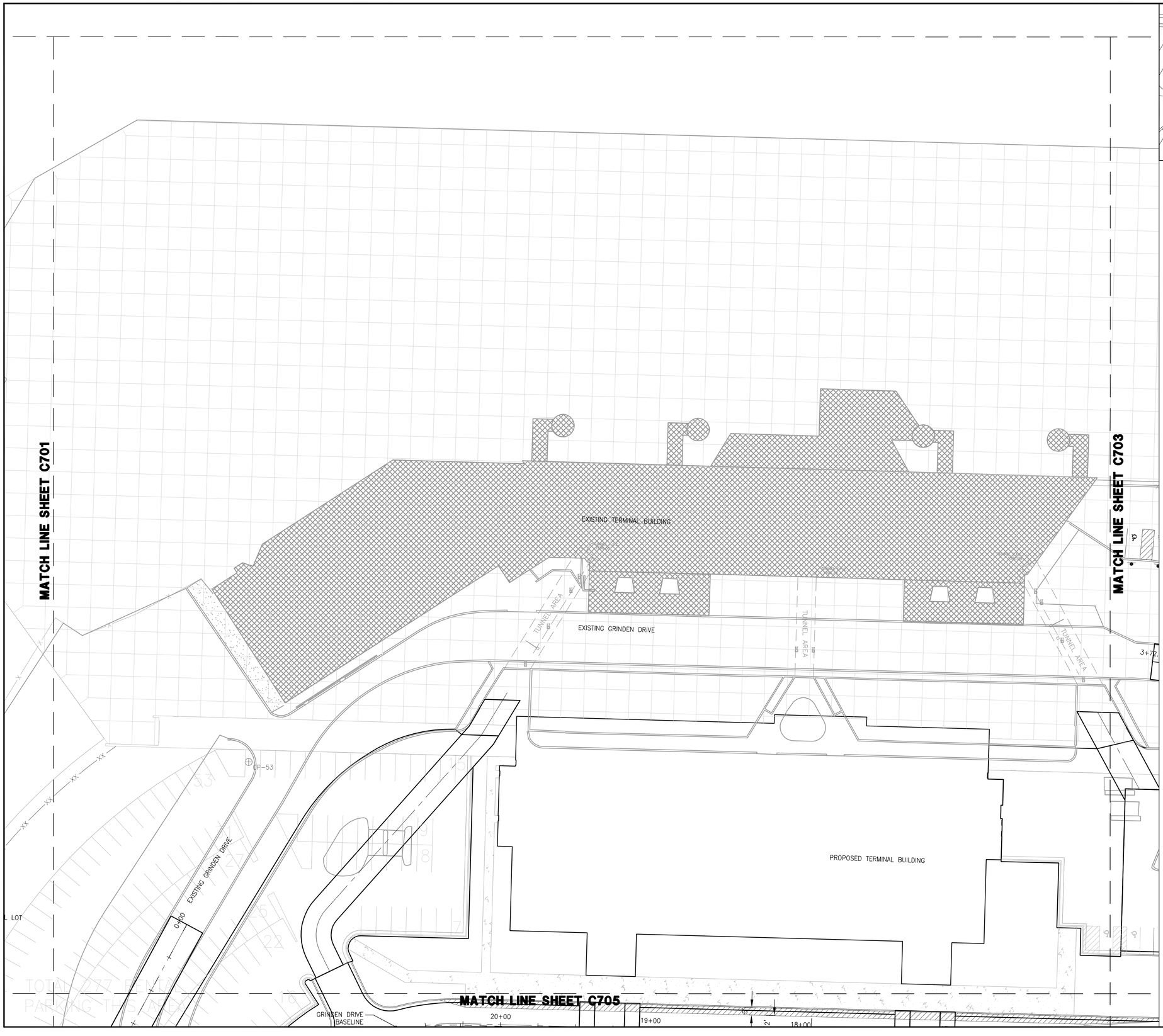
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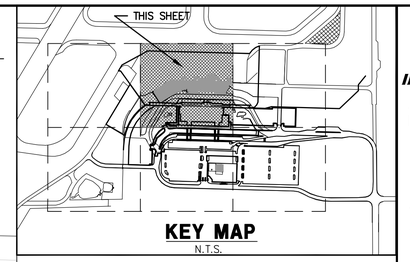
SHEET TITLE
PAVEMENT MARKING AND SIGNAGE PLAN (SHEET 1 OF 6)

SHEET NUMBER
C701

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C701.dwg Plotted on: 4/17/2010 1:43 PM Plotted by: Dixon, Lukas





KEY MAP
N.T.S.

NORTH

0 30' 60'

LEGEND

- PEDESTRIAN CROSSWALK PAVEMENT MARKINGS
- 4" WIDE PAVEMENT MARKINGS
- DIRECTIONAL ARROW
- STOP BAR PAVEMENT MARKING
- SIGN COMPLETE W/ POST – TYPE AS NOTED
- FUTURE PAVEMENT MARKINGS (TYPICAL)

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Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

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NO.	DESCRIPTION	DATE

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DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
PAVEMENT MARKING AND SIGNAGE PLAN (SHEET 2 OF 6)

SHEET NUMBER
C702

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C702.dwg Plotted on: 4/1/2010 1:49 PM Plotted by: Dixon, Lukas

MATCH LINE SHEET C702

REMARK AS HANDICAP EVERY OTHER EXISTING PARKING SPOTS THIS AREA (17 HANDICAP PARKING)

HANDICAP PARKING SIGN (TYP.)

HANDICAP PARKING SIGN (TYP.)

TEMP ROAD (EAST) BASELINE

3+72.04

3+00

2+00

1+00

STOP SIGN (R1-1,CR)

STOP BAR

WHITE LANE CHANNELIZATION MARKING

EMPLOYEE PARKING ROAD BASELINE

4" SOLID WHITE EDGE MARKING STA 0+25- STA 3+72

TEMPORARY CL

PT = 1+11.23

ONE WAY SIGN (R6-2R, CR)

EXISTING GRINDEN DRIVE

TUNNEL AREA

CP-54

3+70

3+00

2+00

1+00

EMPLOYEE PARKING ROAD

PC = 0+00

9 - 9' SPACES

23 - 9' SPACES

23 - 9' SPACES

36 - 9' SPACES

11 - 9' SPACES

8 - 9' SPACES

8 - 9' SPACES

10 - 9' SPACES

18'

24'

9'

27'

TOTAL 132 THIS AREA
+ 10 GENERATOR AREA

MATCH LINE SHEET C706

4" WHITE DASH STRIPING STA 12+60-15+75

GRINDEN DRIVE BASELINE

THIS SHEET

KEY MAP
N.T.S.

NORTH

0 30' 60'

LEGEND

- PEDESTRIAN CROSSWALK PAVEMENT MARKINGS
- 4" WIDE PAVEMENT MARKINGS
- DIRECTIONAL ARROW
- STOP BAR PAVEMENT MARKING
- SIGN COMPLETE W/ POST – TYPE AS NOTED
- FUTURE PAVEMENT MARKINGS (TYPICAL)

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AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE
PAVEMENT MARKING AND SIGNAGE PLAN (SHEET 3 OF 6)

SHEET NUMBER
C703

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C703.dwg Plotted on: 4/17/2010 1:55 PM Plotted by: Dixon, Lukas

MATCH LINE SHEET C701

TAXIWAY "D"

EXISTING SOUTH PERIMETER ROAD

5+50.75

5+00

PT = 4+74.12

PC = 3+92.77

4+00

3+00

2+00

EXISITNG AIRFIELD ACCESS

FUTURE RENTAL LOT

FUTURE RENTAL LOT

TOTAL PARKING

PC = 2+87

PT = 2+1

2+00

3+00

EXISTI

1+0

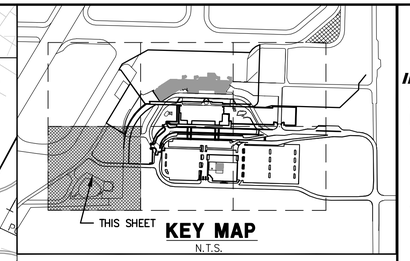
MATCH LINE SHEET C705

EXISTING SECURITY FENCE

PROPOSED FENCE SEE SHEET C220

POND

POND



KEY MAP
N.T.S.

NORTH

0 30' 60'

LEGEND

- PEDESTRIAN CROSSWALK PAVEMENT MARKINGS
- 4" WIDE PAVEMENT MARKINGS
- DIRECTIONAL ARROW
- STOP BAR PAVEMENT MARKING
- SIGN COMPLETE W/ POST – TYPE AS NOTED
- FUTURE PAVEMENT MARKINGS (TYPICAL)

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AEP PROJECT NUMBER
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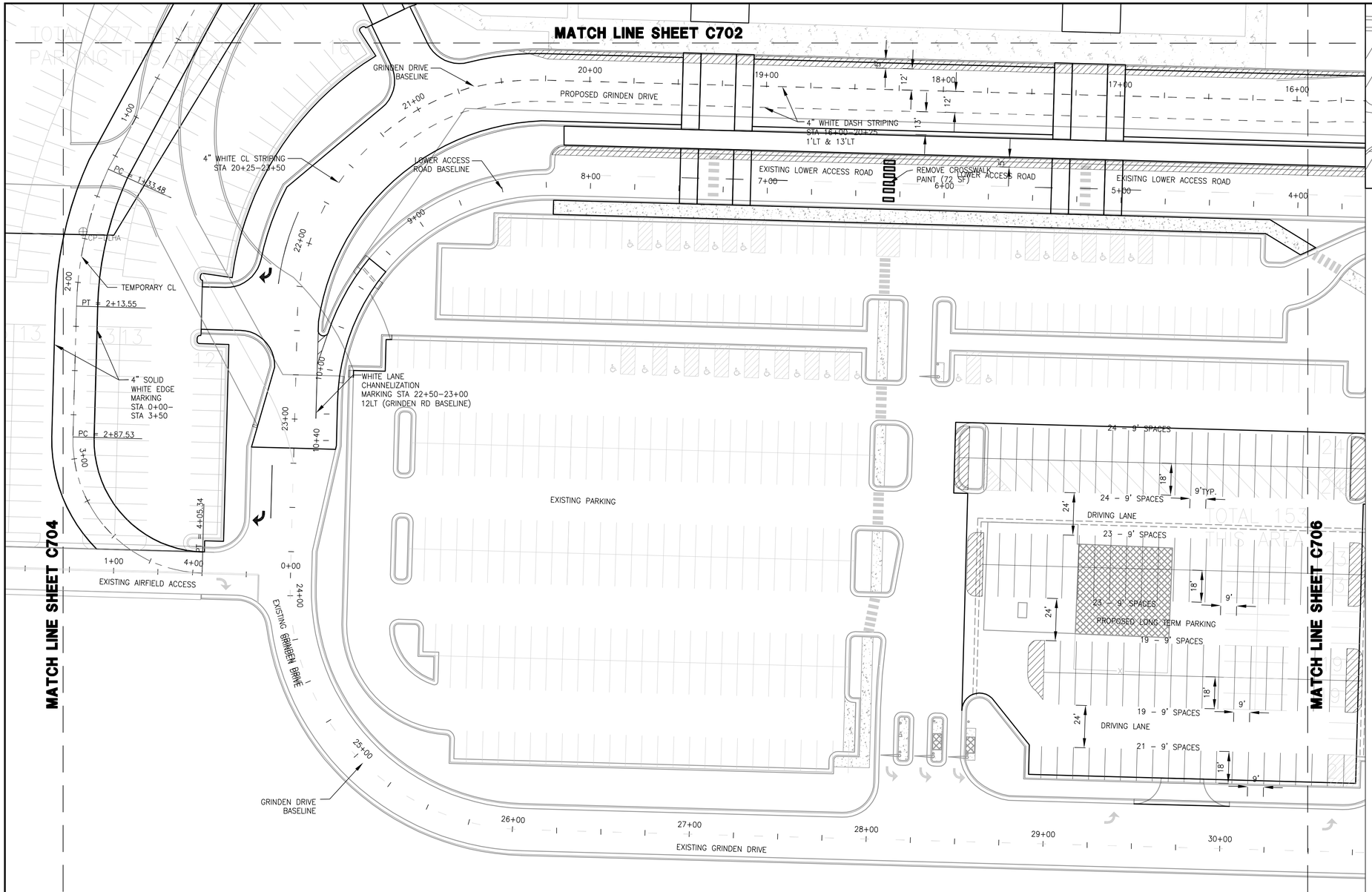
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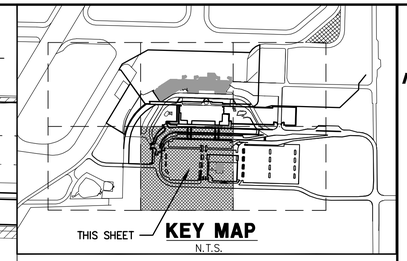
SHEET TITLE
PAVEMENT MARKING AND SIGNAGE PLAN (SHEET 4 OF 6)

SHEET NUMBER
C704

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C704.dwg Plotted on: 4/1/2010 1:57 PM Plotted by: Dixon, Lukas





NORTH

0 30' 60'

LEGEND

- PEDESTRIAN CROSSWALK PAVEMENT MARKINGS
- 4" WIDE PAVEMENT MARKINGS
- DIRECTIONAL ARROW
- STOP BAR PAVEMENT MARKING
- SIGN COMPLETE W/ POST – TYPE AS NOTED
- FUTURE PAVEMENT MARKINGS (TYPICAL)

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AEP PROJECT NUMBER
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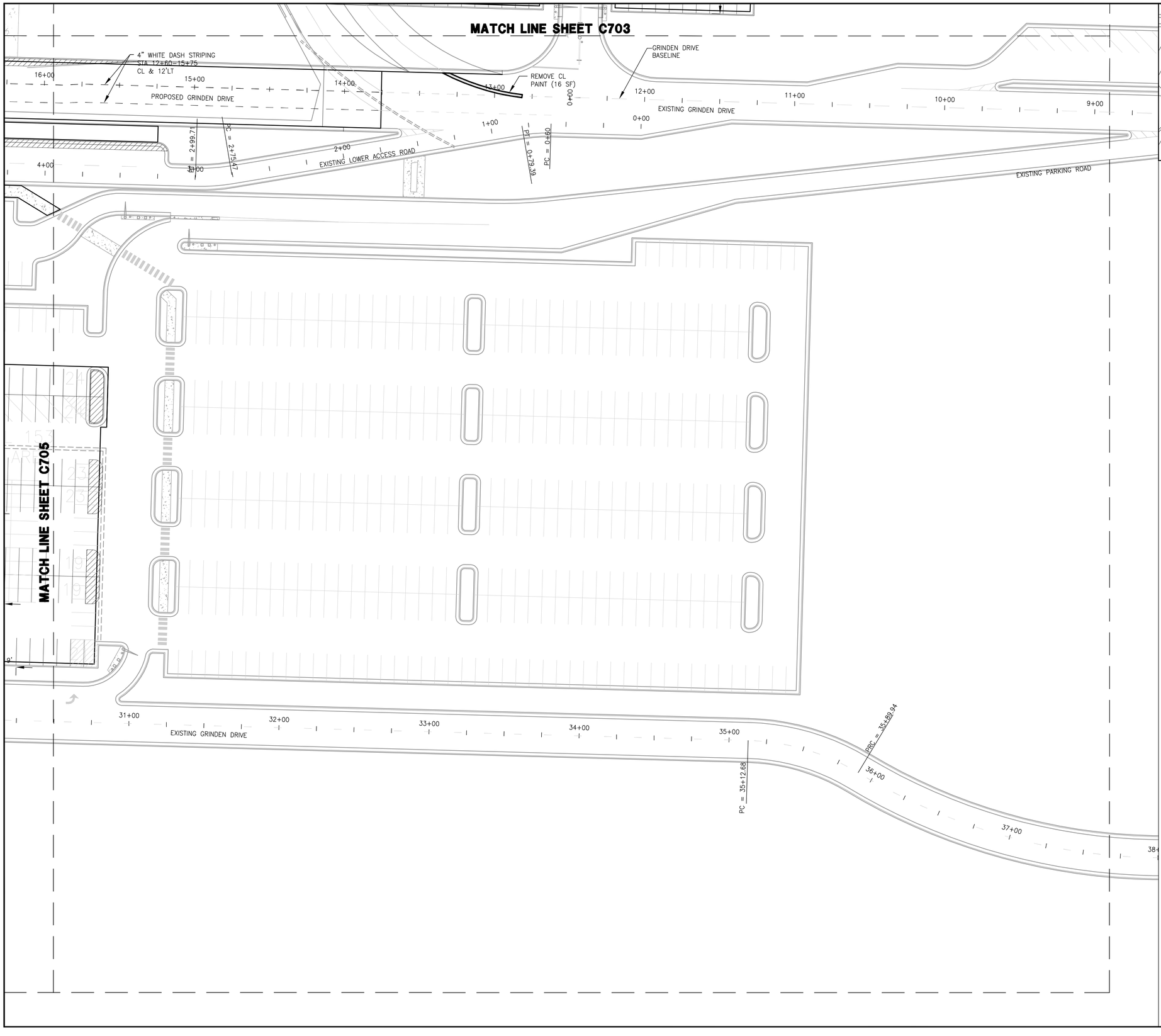
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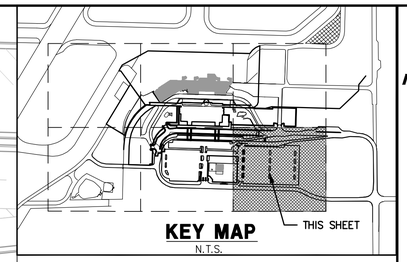
SHEET TITLE
PAVEMENT MARKING AND SIGNAGE PLAN (SHEET 5 OF 6)

SHEET NUMBER
C705

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C705.dwg Plotted on: 4/1/2010 1:59 PM Plotted by: Dixon, Lukas





KEY MAP
N.T.S.

NORTH

0 30' 60'

LEGEND

- PEDESTRIAN CROSSWALK PAVEMENT MARKINGS
- 4" WIDE PAVEMENT MARKINGS
- DIRECTIONAL ARROW
- STOP BAR PAVEMENT MARKING
- SIGN COMPLETE W/ POST – TYPE AS NOTED
- FUTURE PAVEMENT MARKINGS (TYPICAL)

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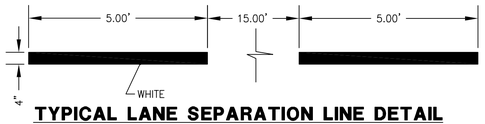
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SHEET TITLE
PAVEMENT MARKING AND SIGNAGE PLAN (SHEET 6 OF 6)

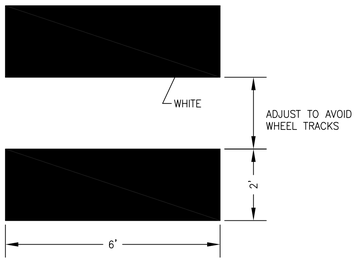
SHEET NUMBER
C706

90% NOT FOR CONSTRUCTION

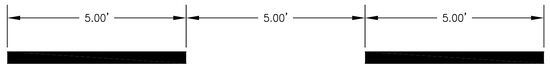
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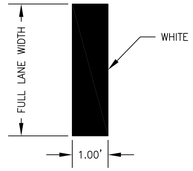
TYPICAL LANE SEPARATION LINE DETAIL
N.T.S.



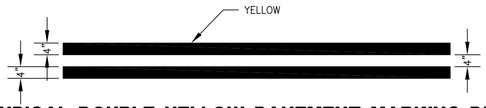
TYPICAL PEDESTRIAN CROSSWALK MARKING DETAIL
N.T.S.



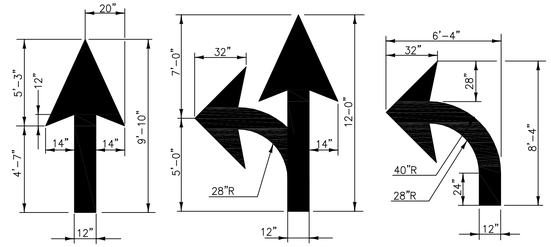
TYPICAL LANE SEPARATION MARKING DETAIL (STA 12+61.54 TO STA 25+00 - PROPOSED GRINDEN DRIVE) N.I.C.
N.T.S.



TYPICAL STOP LINE PAVEMENT MARKING DETAIL
N.T.S.

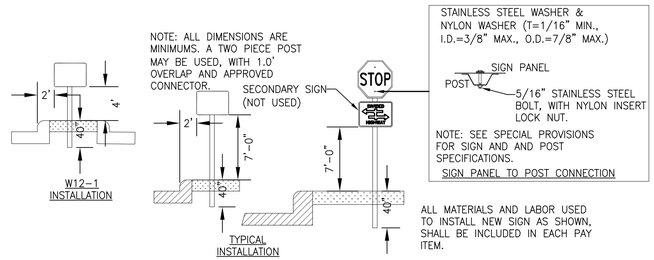


TYPICAL DOUBLE YELLOW PAVEMENT MARKING DETAIL
N.T.S.

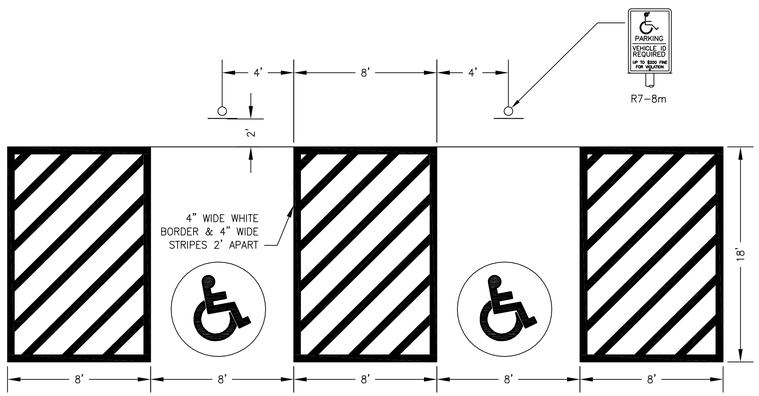


NOTE:
ALL PAVEMENT MARKINGS SHALL BE PAINTED TRAFFIC WHITE.

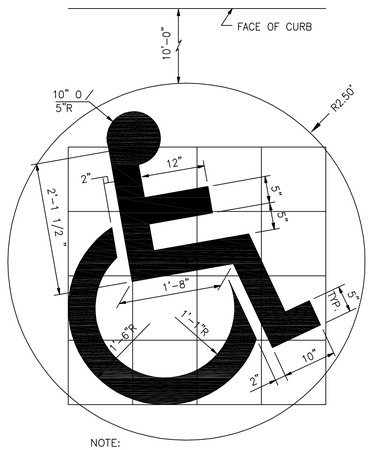
DIRECTIONAL ARROW PAVEMENT MARKING DETAILS
N.T.S.



SIGN INSTALLATION DETAIL
N.T.S.

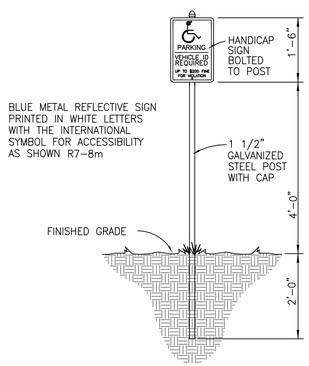


TYPICAL HANDICAP PARKING SPACE DETAIL
N.T.S.



NOTE:
SYMBOL TO BE PAINTED WITH WHITE.
CIRCLE TO BE PAINTED WITH BLUE.

TYPICAL PAVEMENT MARKING FOR HANDICAPPED SYMBOL



TYPICAL HANDICAP PARKING SIGN
N.T.S.

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SHEET TITLE

PAVEMENT MARKING AND SIGNAGE DETAILS

SHEET NUMBER
C707

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-C707.dwg Plotted on: 4/7/2010 2:03 PM Plotted by: Dixon, Lukas

SITE ELECTRICAL NOTES

ELECTRICAL NOTES:

GENERAL:
ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE LATEST NATIONAL ELECTRICAL CODE (NFPA 70), THE LIFE SAFETY CODE (NFPA 101), OSHA, STATE AND LOCAL CODES.

ALL MATERIALS USED ON THIS PROJECT SHALL BE NEW, UL APPROVED, UNLESS NOTED OTHERWISE.

ALL CIRCUIT CONDUCTORS SHALL BE COPPER TYPE THHN #10 AWG MINIMUM. ADJUST WIRE SIZE FOR VOLTAGE DROP AS REQUIRED.

ALL BRANCH CIRCUIT WIRING SHALL BE INSTALLED IN SCHEDULE 80 PVC CONDUIT AS INDICATED ON THE DRAWINGS. MINIMUM CONDUIT SIZE SHALL BE 2" TRADE SIZE. CONCRETE EMBEDDED FEEDER CONDUIT SHALL BE CORROSION RESISTANT GALVANIZED IMC OR RIGID METAL CONDUIT WITH THREADED FITTINGS. SET SCREW FITTINGS ARE NOT PERMITTED. EMPTY CONDUIT SHALL BE PROVIDED WITH PULL STRING INSTALLED AND ENDS CAPPED.

PLAN:

PROVIDE BRANCH CIRCUIT WIRING TO LIGHT POLES & PARKING GATES USING #6 WIRE TO FIRST POLE/GATE AND #8 WIRE TO REMAINING POLES ON RUN.

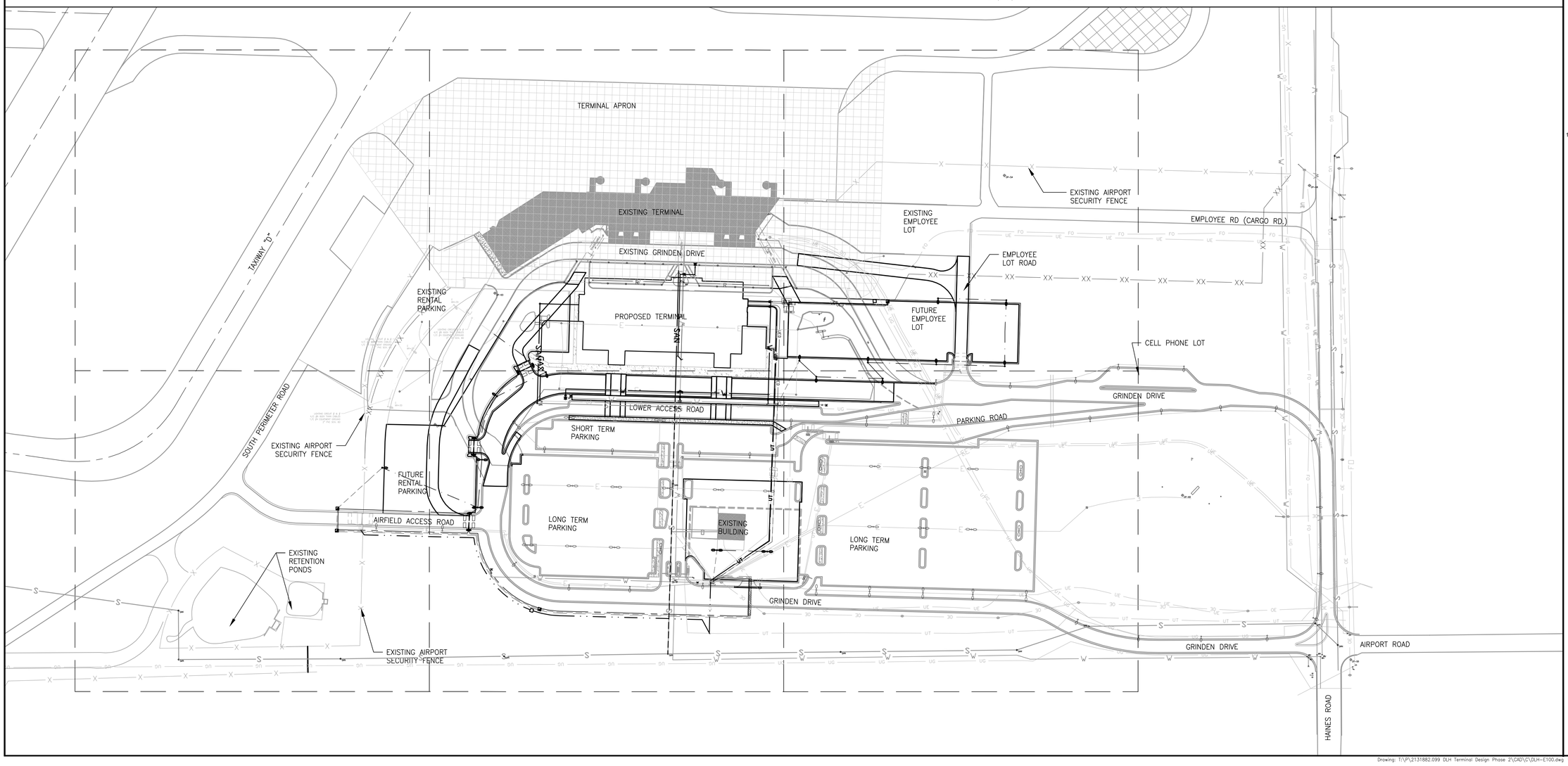
NORTH

0 100' 200'

NOTE:

1. PRIOR TO DIGGING THE CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL. 1-800-252-1166

2. THE CONTRACTOR SHALL BE RESPONSIBLE TO MARK, MAINTAIN, AND REMARK IF NECESSARY, ALL PRIVATE (DAA) OWNED UTILITIES.



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DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW TERMINAL DESIGN

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Landscaping Consultants:
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TEL: (218) 591-5079

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Print Name: JOHN E. HIPPCHEN

Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

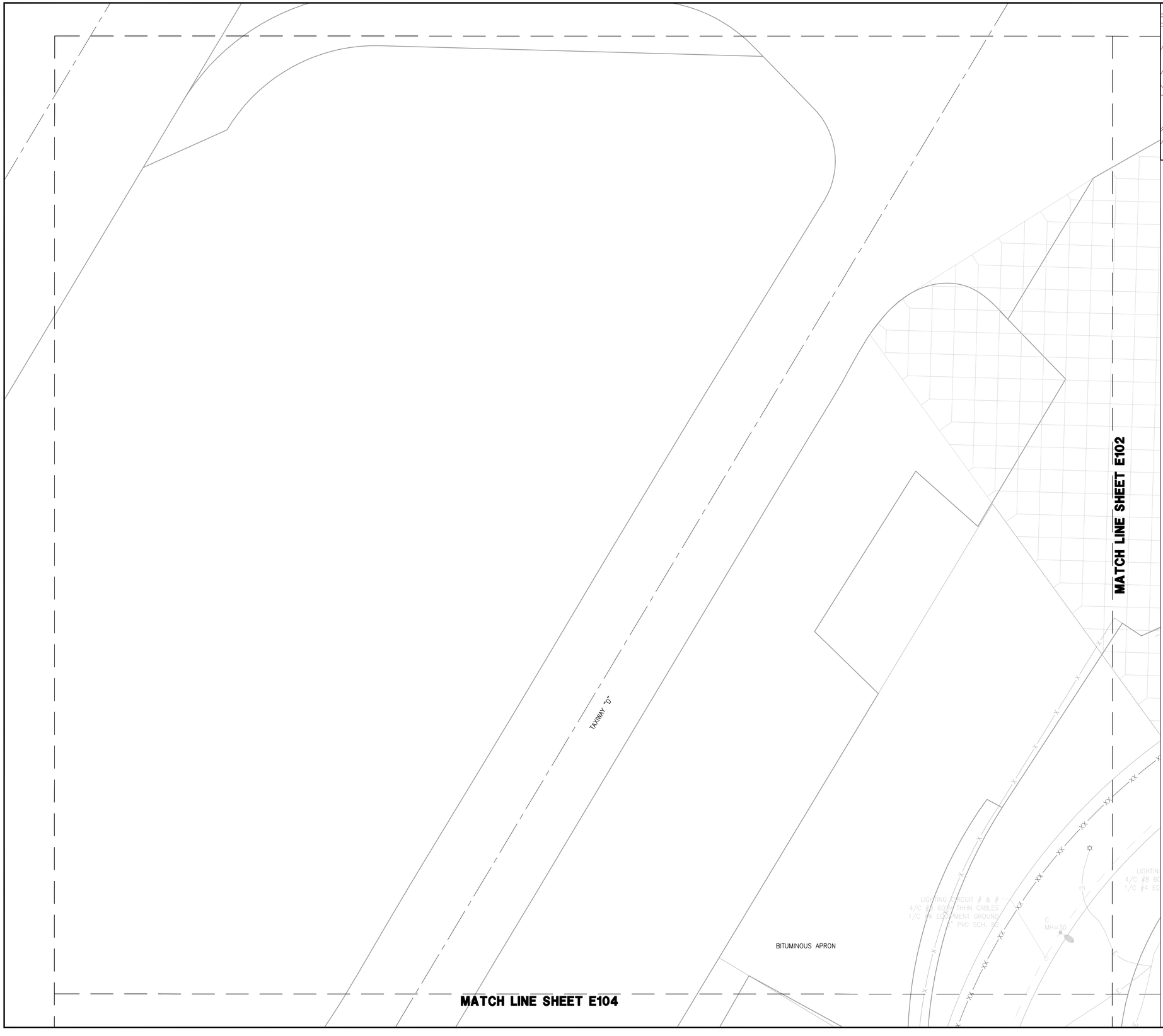
SITE ELECTRICAL AND COMMUNICATION OVERALL PLAN AND NOTES

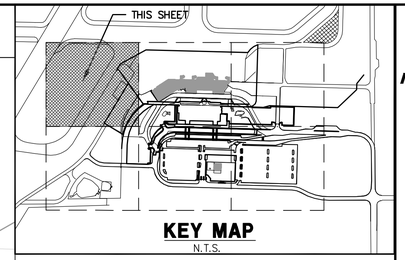
SHEET NUMBER

E100

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-E100.dwg Plotted on: 4/1/2010 2:04 PM Plotted by: Dixon, Lukas





KEY MAP
N.T.S.

NORTH

0 30' 60'

LEGEND

- 2/C #6 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 4/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 2/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- UCD — PROPOSED CONDUIT DUCTS
- OHE — PROPOSED OVERHEAD ELECT.
- OE — EXISTING OVERHEAD ELECT.
- EXISTING POWER POLE
- PROPOSED POWER POLE
- PROPOSED ELECT. MANHOLE
- PROPOSED LIGHT POLES
- PROPOSED PHONE PEDESTAL
- PROPOSED COMM MANHOLE
- UE — EXISTING UNDERGROUND ELECT.
- E — EXISTING –PRIVATE– ELECT.
- EXISTING LIGHT & POLE
- UT — PROPOSED PHONE CABLES
- UT — EXISTING PHONE CABLES
- UTV — EXISTING CATV CABLES
- FO — EXISTING FIBER OPTIC CABLE
- EXISTING PARKING GATE
- EXISTING ELECT. MANHOLE
- W — PROPOSED WATERMAIN
- W — EXISTING WATERMAIN
- S — EXISTING SANITARY
- SAN — PROPOSED SANITARY
- SAN — EXISTING SANITARY MANHOLE
- PROPOSED SANITARY MANHOLE
- UG — EXISTING GAS LINE
- GAS — PROPOSED GAS LINE
- EXISTING HYDRANT
- PROPOSED HYDRANT

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REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

SITE ELECTRICAL AND COMM. PLAN (SHEET 1 OF 6)

SHEET NUMBER

E101

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-E101.dwg Plotted on: 4/1/2010 2:08 PM Plotted by: Dixon, Lukas

MATCH LINE SHEET E101

MATCH LINE SHEET E103

EXISTING TERMINAL BUILDING

CONNECTS TO J-BOX IN TUNNEL

TUNNEL AREA

GATE

CONNECTS TO J-BOX

GP-53

C MH=30

LIGHTING CIRCUIT # & #
4/C #8 600V THHN CABLES
1/C #4 EQUIPMENT GROUND
2" PVC SCH. 80

EXISTING GRINDEN DRIVE

TEMP. OVERHEAD ELECTRIC

6" D.I. WTR

EXISTING HYDRANT

SAN

REMOVE (5) LIGHTS & BASE THIS AREA

REMOVE (3) LIGHTS & BASE THIS AREA

REMOVE LIGHT & BASE

REMOVE GATES (2)

ELECTRIC IN GUARD RAIL

GATE SECURITY COMM LINE
(SECURITY) 1~SIZE CABLE?
(TOLL BOOTH) 1~ANMW-25 PR
PROPOSED 1~2" PVC SCH. 80
1~2" PVC SCH. 80 (SPARE)

PRKG GATES CIRCUITS # & #
2/C #8 600V THHN CABLES
1/C #4 EQUIPMENT GROUND
2" PVC SCH. 80

MATCH LINE SHEET E105

MH=30

20+00

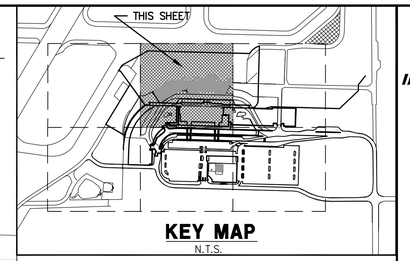
19+00

18+00

3+72.

P.E. HPG

C MH=30



KEY MAP
N.T.S.

NORTH

0 30' 60'

LEGEND

- 2/C #6 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 4/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 2/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- PROPOSED CONDUIT DUCTS
- PROPOSED OVERHEAD ELECT.
- EXISTING OVERHEAD ELECT.
- EXISTING POWER POLE
- PROPOSED POWER POLE
- PROPOSED ELECT. MANHOLE
- PROPOSED LIGHT POLES
- PROPOSED PHONE PEDESTAL
- PROPOSED COMM MANHOLE
- EXISTING UNDERGROUND ELECT.
- EXISTING –PRIVATE– ELECT.
- EXISTING LIGHT & POLE
- PROPOSED PHONE CABLES
- EXISTING PHONE CABLES
- EXISTING CATV CABLES
- EXISTING FIBER OPTIC CABLE
- EXISTING PARKING GATE
- EXISTING ELECT. MANHOLE
- PROPOSED WATERMAIN
- EXISTING WATERMAIN
- EXISTING SANITARY
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- EXISTING SANITARY MANHOLE
- PROPOSED SANITARY MANHOLE
- EXISTING GAS LINE
- PROPOSED GAS LINE
- EXISTING HYDRANT
- PROPOSED HYDRANT

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Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

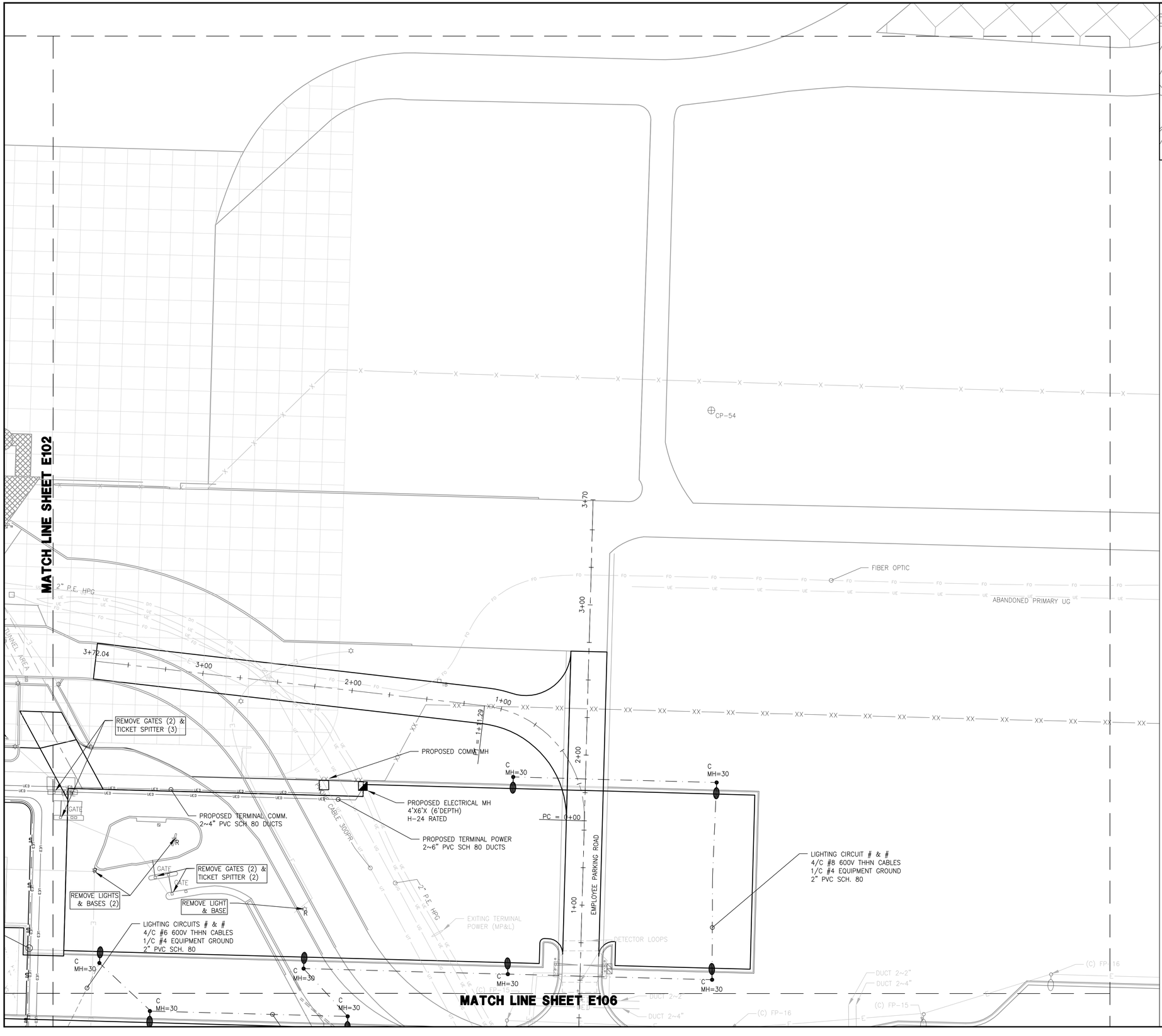
SITE ELECTRICAL AND COMM. PLAN (SHEET 2 OF 6)

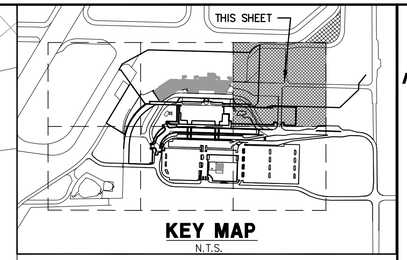
SHEET NUMBER

E102

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-E102.dwg Plotted on: 4/1/2010 2:10 PM Plotted by: Dixon, Lukas





KEY MAP
N.T.S.

NORTH

0 30' 60'

LEGEND

- 2/C #6 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 4/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 2/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- PROPOSED CONDUIT DUCTS
- PROPOSED OVERHEAD ELECT.
- EXISTING OVERHEAD ELECT.
- EXISTING POWER POLE
- PROPOSED POWER POLE
- PROPOSED ELECT. MANHOLE
- PROPOSED LIGHT POLES
- PROPOSED PHONE PEDESTAL
- PROPOSED COMM MANHOLE
- EXISTING UNDERGROUND ELECT.
- EXISTING –PRIVATE– ELECT.
- EXISTING LIGHT & POLE
- PROPOSED PHONE CABLES
- EXISTING PHONE CABLES
- EXISTING CATV CABLES
- EXISTING FIBER OPTIC CABLE
- EXISTING PARKING GATE
- EXISTING ELECT. MANHOLE
- PROPOSED WATERMAIN
- EXISTING WATERMAIN
- EXISTING SANITARY
- PROPOSED SANITARY
- EXISTING SANITARY MANHOLE
- PROPOSED SANITARY MANHOLE
- EXISTING GAS LINE
- PROPOSED GAS LINE
- EXISTING HYDRANT
- PROPOSED HYDRANT

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REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

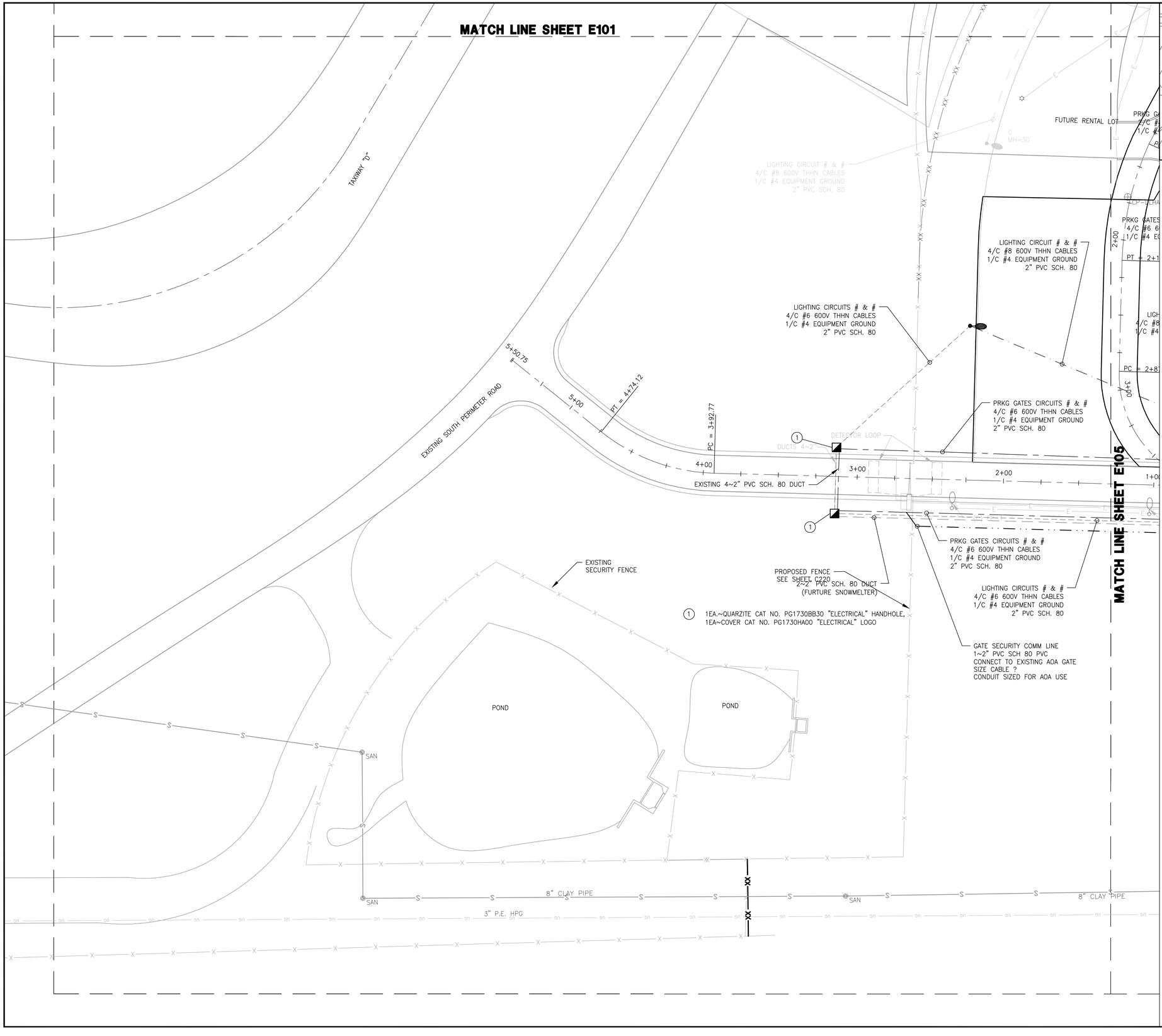
SITE ELECTRICAL AND COMM. PLAN (SHEET 3 OF 6)

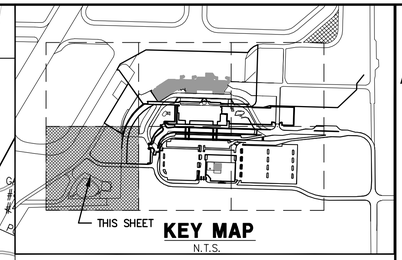
SHEET NUMBER

E103

90% NOT FOR CONSTRUCTION

Drawing: T:\P\213188 2.099 DLH Terminal Design Phase 2\CAD\C\DLH-E103.dwg Plotted on: 4/7/2010 2:13 PM Plotted by: Dixon, Lukas





KEY MAP
N.T.S.

NORTH

0 30' 60'

LEGEND

- 2/C #6 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 4/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 2/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- UED — PROPOSED CONDUIT DUCTS
- OHE — PROPOSED OVERHEAD ELECT.
- OE — EXISTING OVERHEAD ELECT.
- EXISTING POWER POLE
- PROPOSED POWER POLE
- PROPOSED ELECT. MANHOLE
- PROPOSED LIGHT POLES
- PROPOSED PHONE PEDESTAL
- PROPOSED COMM MANHOLE
- UE — EXISTING UNDERGROUND ELECT.
- E — EXISTING –PRIVATE– ELECT.
- EXISTING LIGHT & POLE
- UT — PROPOSED PHONE CABLES
- UT — EXISTING PHONE CABLES
- UTV — EXISTING CATV CABLES
- FO — EXISTING FIBER OPTIC CABLE
- EXISTING PARKING GATE
- EXISTING ELECT. MANHOLE
- W — PROPOSED WATERMAIN
- W — EXISTING WATERMAIN
- S — EXISTING SANITARY
- SAN — PROPOSED SANITARY
- SAN — EXISTING SANITARY MANHOLE
- PROPOSED SANITARY MANHOLE
- UG — EXISTING GAS LINE
- GAS — PROPOSED GAS LINE
- EXISTING HYDRANT
- PROPOSED HYDRANT

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AEP PROJECT NUMBER
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SHEET TITLE

SITE ELECTRICAL AND COMM. PLAN (SHEET 4 OF 6)

SHEET NUMBER

E104

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-E104.dwg Plotted on: 4/17/2010 2:17 PM Plotted by: Dixon, Lukas

MATCH LINE SHEET E102

MATCH LINE SHEET E104

MATCH LINE SHEET E106

1/C #4 EQUIPMENT GROUND
2" PVC SCH. 80

PRKG GATES CIRCUITS # & #
4/C #6 600V THHN CABLES
1/C #4 EQUIPMENT GROUND
2" PVC SCH. 80

PC = 1+33.48

PRKG GATES CIRCUITS # & #
4/C #6 600V THHN CABLES
1/C #4 EQUIPMENT GROUND
2" PVC SCH. 80

PT = 2+13.55

LIGHTING CIRCUIT # & #
4/C #8 600V THHN CABLES
1/C #4 EQUIPMENT GROUND
2" PVC SCH. 80

PC = 2+87.53

PT = 4+05.34

PC = 23+93.68

NOTE: EACH GATE
120V, 5.8 AMPS

PT = 22+38.68

PT = 10+19

REMOVE LIGHT & BASE

PC = 20+26.55

PC = 8+20.57

PT = 25+05.67

LOWER ACCESS ROAD

EXISTING COMM AND ELEC. MH

GATE SECURITY COMM LINE
(SECURITY) 1~SIZE CABLE?
(TOLL BOOTH) 1~ANMW-25 PR
(BOTH IN SAME)
EXISTING 2" PVC SCH. 80

4~2" CONDUIT DUCTS
2~2" CONDUIT DUCTS FOR

4/C #6 600V THHN CABLES
1/C #4 EQUIPMENT GROUND
IN EXISTING 2" PVC SCH. 80

LIGHTING CIRCUIT # & #
4/C #8 600V THHN CABLES
1/C #4 EQUIPMENT GROUND
2" PVC SCH. 80

LIGHTING CIRCUIT # & #
4/C #6 600V THHN CABLES
1/C #4 EQUIPMENT GROUND
2" PVC SCH. 80

EXISTING COMM MH

EXISTING ELEC. MH

EXISTING ELECTRICAL
PANNELS / TRANS.

EXISTING 4" PVC DUCT

2~2" PVC SCH. 80 DUCT
FURTURE SNOWMELTER

DIRICTIONAL BORING
75 LF 4~2" PVC SCH. 80
± 6' BELOW ℄ ROAD

PRKG GATES CIRCUITS # & #
4/C #6 600V THHN CABLES
1/C #4 EQUIPMENT GROUND
2" PVC SCH. 80

LIGHTING CIRCUITS # & #
4/C #6 600V THHN CABLES
1/C #4 EQUIPMENT GROUND
2" PVC SCH. 80

GATE SECURITY COMM LINE
1~2" PVC SCH 80 PVC
SIZE CABLE ?
CONDUIT SIZED FOR FUTURE USE

(1) 1~QUARZITE CAT NO. PG1730BB30 "ELECTRICAL" HANDHOLE,
1~COVER CAT NO. PG1730HA00 "ELECTRICAL" LOGO

(2) 1~QUARZITE CAT NO. PG1730BB30 "COMM" HANDHOLE,
1~COVER CAT NO. PG1730HA00 "COMM" LOGO

GRINDEN DRIVE

TURE RENTAL LOT

A2 MH=30

MH=30

THIS SHEET — KEY MAP
N.T.S.

NORTH

0 30' 60'

LEGEND

- 2/C #6 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 4/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 2/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- PROPOSED CONDUIT DUCTS
- OHE — PROPOSED OVERHEAD ELECT.
- OE — EXISTING OVERHEAD ELECT.
- EXISTING POWER POLE
- PROPOSED POWER POLE
- PROPOSED ELECT. MANHOLE
- PROPOSED LIGHT POLES
- PROPOSED PHONE PEDESTAL
- PROPOSED COMM MANHOLE
- UE — EXISTING UNDERGROUND ELECT.
- EXISTING –PRIVATE– ELECT.
- EXISTING LIGHT & POLE
- UT — PROPOSED PHONE CABLES
- UT — EXISTING PHONE CABLES
- UTV — EXISTING CATV CABLES
- FO — EXISTING FIBER OPTIC CABLE
- EXISTING PARKING GATE
- EXISTING ELECT. MANHOLE
- W — PROPOSED WATERMAIN
- W — EXISTING WATERMAIN
- S — EXISTING SANITARY
- SAN — PROPOSED SANITARY
- SAN — EXISTING SANITARY MANHOLE
- PROPOSED SANITARY MANHOLE
- UG — EXISTING GAS LINE
- GAS — PROPOSED GAS LINE
- EXISTING HYDRANT
- PROPOSED HYDRANT

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DULUTH AIRPORT AUTHORITY

DULUTH INTERNATIONAL AIRPORT DULUTH, MN

NEW TERMINAL DESIGN

CONSULTANTS

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TEL: (218) 591-5079

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer or Architect under the laws of the State of Minnesota.

Print Name: JOHN E. HIPPCHEN

Signature: John E Hippchen

Date: 03/29/2010 Reg. No.: 22088

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 03-29-2010
REVIEWED BY: CEP
DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER
213-1882-091

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SHEET TITLE

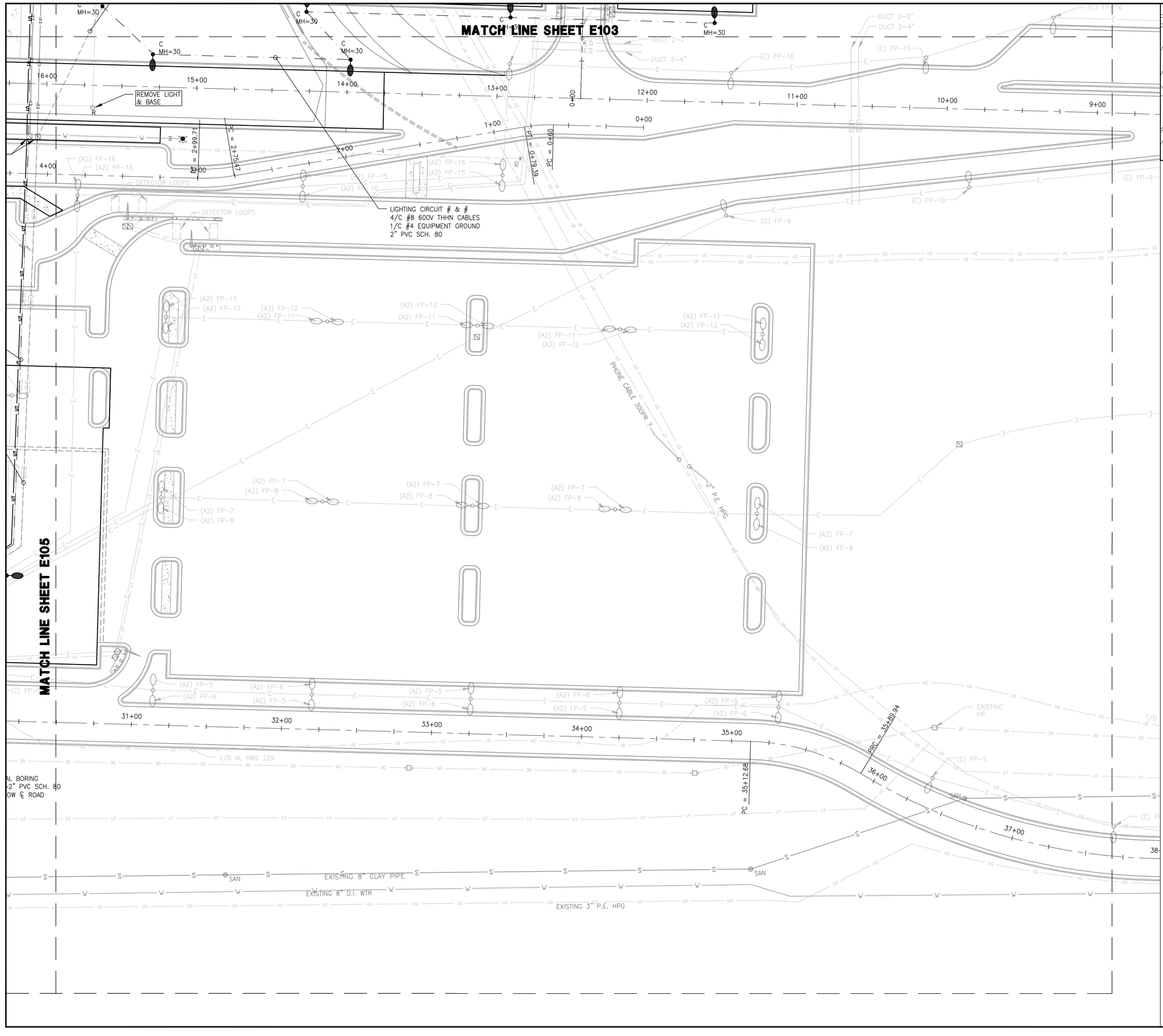
SITE ELECTRICAL AND COMM. PLAN (SHEET 5 OF 6)

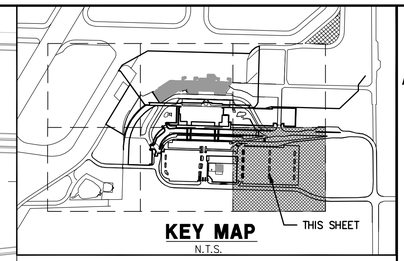
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E105

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-E105.dwg Plotted on: 4/7/2010 2:20 PM Plotted by: Dixon, Lukas





KEY MAP
N.T.S.

NORTH

0 30' 60'

LEGEND

- 2/C #6 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 4/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- 2/C #8 THHN 600V, 1/C #4 GRD. IN CONDUIT
- PROPOSED CONDUIT DUCTS
- DHE — PROPOSED OVERHEAD ELECT.
- OE — EXISTING OVERHEAD ELECT.
- EXISTING POWER POLE
- PROPOSED POWER POLE
- PROPOSED ELECT. MANHOLE
- PROPOSED LIGHT POLES
- PROPOSED PHONE PEDESTAL
- PROPOSED COMM MANHOLE
- UE — EXISTING UNDERGROUND ELECT.
- E — EXISTING –PRIVATE– ELECT.
- EXISTING LIGHT & POLE
- UT — PROPOSED PHONE CABLES
- UT — EXISTING PHONE CABLES
- UTV — EXISTING CATV CABLES
- FO — EXISTING FIBER OPTIC CABLE
- EXISTING PARKING GATE
- EXISTING ELECT. MANHOLE
- W — PROPOSED WATERMAIN
- W — EXISTING WATERMAIN
- S — EXISTING SANITARY
- SAN — PROPOSED SANITARY
- SAN — EXISTING SANITARY MANHOLE
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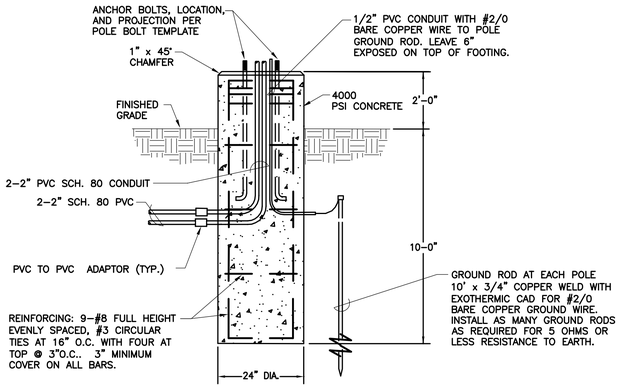
SITE ELECTRICAL AND COMM. PLAN (SHEET 6 OF 6)

SHEET NUMBER

E106

90% NOT FOR CONSTRUCTION

Drawing: T:\P\2131882.099 DLH Terminal Design Phase 2\CAD\C\DLH-E106.dwg Plotted on: 4/1/2010 2:22 PM Plotted by: Dixon, Lukas

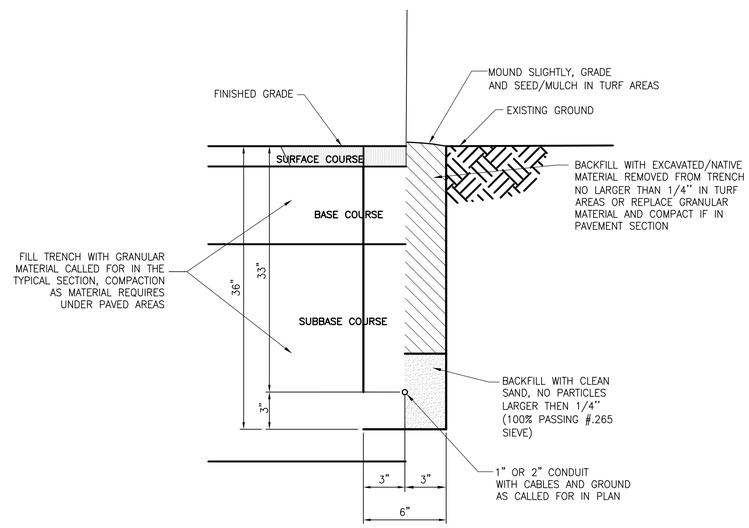


1 30' LIGHT POLE FOUNDATION DETAIL

N.T.S.

LIGHTING FIXTURE SCHEDULE NOTES:

1. THE LIGHTING FIXTURE SCHEDULE AND CATALOG NUMBERS INDICATE MAJOR REQUIREMENTS FOR THE LIGHTING FIXTURES. WHETHER SPECIFIED BY THE CATALOG NUMBERS OR NOT THE CONTRACTOR SHALL PROVIDE ALL COMPONENTS, HARDWARE AND RELATED ITEMS TO PROVIDE A COMPLETE LIGHTING FIXTURE TO MEET THE REQUIREMENTS AS SPECIFIED IN THE DRAWINGS AND SPECIFICATIONS.
2. WHERE APPROVED EQUAL OR SINGLE MANUFACTURER FIXTURE IS INDICATED, THE CONTRACTOR MAY SUBMIT A FIXTURE WHICH IS EQUAL OR BETTER TO THE A/E FOR SHOP DRAWING APPROVAL. THE A/E'S DETERMINATION FOR APPROVED EQUAL SHALL GOVERN. PROVIDE A COMPLETE DETAIL OF THE EQUAL FIXTURE WITH A COMPARISON TO THE SPECIFIED FIXTURE. PHOTOMETRIC (POINT-TO-POINT) LAYOUT OF LIGHTED AREA SHALL ALSO BE PROVIDED BY THE CONTRACTOR FROM THE MANUFACTURER.
3. PROVIDE COLD WEATHER BALLASTS FOR FIXTURES LOCATED OUTSIDE.
4. PROVIDE ANCHOR BOLTS. DIAMETER AND LENGTH AS REQUIRED TO MEET EPA (90 MPH) WIND REQUIREMENTS.

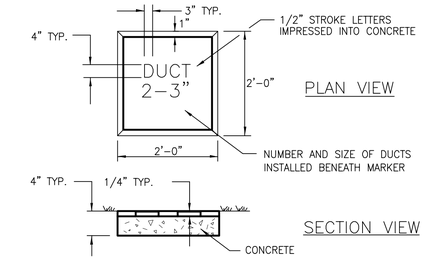


2 CABLE / CONDUIT TRENCH DETAIL

N.T.S.

NTS

NOTE:
FOR MULTIPLE CABLE CONDUIT TRENCHES, CONDUITS SHALL BE SEPARATED 2" MIN WIDEN TRENCH ACCORDINGLY.

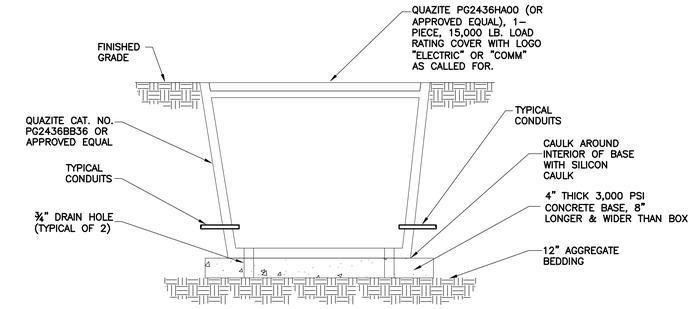


NOTES:

1. CONTRACTOR SHALL INSTALL NEW DUCT MARKERS WITH APPROPRIATE INFORMATION 5' OFF EDGE AND ON BOTH SIDES OF PAVEMENT WHEN EXISTING DUCT IS DISCOVERED OR NEW DUCT IS INSTALLED UNDER PAVEMENT.
2. EDGE EXPOSED CONCRETE WITH A "1/4" RADIUS TOOL.

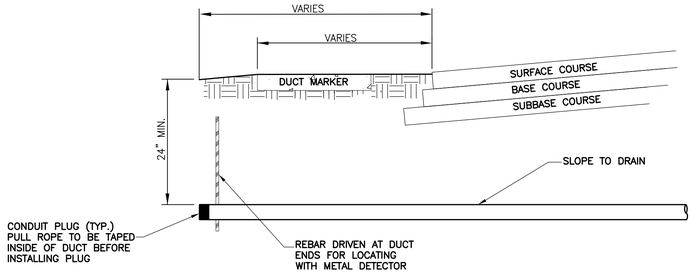
3 DUCT MARKER DETAIL IN TURF

N.T.S.



4 ELECTRICAL HANDHOLE (IN TURF) DETAIL

N.T.S.



5 ELECTRICAL DUCT DETAIL

N.T.S.

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SHEET TITLE

ELECTRICAL, COMM. NOTES AND DETAILS

SHEET NUMBER

E400

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