DULUTH INTERNATIONAL AIRPORT

DULUTH, MINNESOTA

DULUTH AIRPORT AUTHORITY in conjunction with MINNESOTA D.O.T.-OFFICE OF AERONAUTICS and the FEDERAL AVIATION ADMINISTRATION

REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE PHASE 1

MnDOT STATE PROJECT NUMBER: 6901-160 AND 6901-162 AIP PROJECT NUMBER: 03-27-0024-46-09 CITY BID NUMBER: 09-4401

CONSTRUCTION DRAWINGS PREPARED FOR:

4701 GRINDEN DRIVE - DULUTH INTERNATIONAL AIRPORT -**DULUTH, MINNESOTA 55811 - TELEPHONE 218/727-2968**

DULUTH AIRPORT AUTHORITY

DRAWINGS PREPARED BY:



IMPROVING YOUR WORLD

Reynolds, Smith and Hills, Inc.

4525 AIRPORT APPROACH ROAD, SUITE A **DULUTH. MINNESOTA 55811** 218-722-1227 FAX 218-722-1052 www.rsandh.com

BID DOCUMENTS DATE: 05-11-2009

INDEX OF DRAWINGS

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- WARNING -

NORTH

LOCATION OF UNDERGROUND UTILITIES TO BE VERIFIED BY CONTRACTOR. **CALL BEFORE DIGGING** GOPHER STATE ONE CALL 1-800-252-1166 TO NOTIFY LOCAL UTILITIES - REQUIRED BY LAW -

Location of work to be done:

S 1/4, Section 1, T50N, R15W S 1/4, Section 6, T50N, R14W N 1/8, Section 12, T50N, R12W

RS&H PROJECT NUMBERS: 214-1882-093

AIRPORT

_OCATION

DULUTH AIRPORT AUTHORITY



THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN. (AVAILABLE AT: http://www.dot.state.mn.us/tecsup/)

COMPANY: RS&H. INC.

THE 2360 PLANT MIXED ASPHALT PAVEMENT COMBINED 2360/2350 (GYRANTORY/MARSHALL DESIGN) SPECIFICATIONS FOR 2008 CONSTRUCTION SHALL APPLY, AVAILABLE AT http://www.dot.state.mn.us/pre-letting/prov/order/2360-2350-comb

THE 2009 EDITION OF THE CITY OF DULUTH PUBLIC WORKS AND UTILITIES DEPARTMENT STANDARD CONSTRUCTION SPECIFICATION SHALL APPLY

SURCONSULTANT:

APPROVED

GOVERNING SPECIFICATIONS

C601-608 SITE UTILITY PLAN (SHEETS 1-8) C609 SANITARY PLAN AND PROFILE C610-C611 LITILITY CITY OF DULLITH DETAILS (SHEETS 1-2) C700 PAVEMENT MARKING & SIGNAGE OVERALL SITE PLAN & NOTES C701-C708 PAVEMENT MARKING & SIGNAGE PLAN (SHEETS 1-8)

STORMTECH CHAMBER SYSTEM EAST

SITE UTILITY OVERALL PLAN AND NOTES

PAVEMENT MARKING & SIGNAGE DETAILS

STORM CHAMBER SYSTEM DETAILS

WATER QUALITY UNIT WEST

WATER QUALITY UNIT FAST

C515 C516

C517

C518

C519

C600

SITE ELECTRICAL & COMM. OVERALL PLAN AND NOTES E100 F101-E108 SITE ELECTRICAL PLAN (SHEETS 1-8) ELECTRICAL NOTES AND DETAILS CX01 CROSS SECTION KEY PLAN CROSS SECTIONS (1-9) CX02-CX10

				BID DIVISION #1 BID DIVISION #2				
				ACCESS RO	AD AND SITE	SITE ELE	CTRICAL	
				SCHEDULE A SCHEDULE		SCHEDULE A SCHEDULE E		
				ROAD & SITE	PARKING LOT	ROAD & SITE	PARKING LOT	TOTAL
BID ITEM	SPEC. NUMBER	ITEM DESCRIPTION		ESTIMATED QUANTITY	ESTIMATED QUANTITY	ESTIMATED QUANTITY	ESTIMATED QUANTITY	ESTIMATED
1	P-100	MOBILIZATION	LS	0.5	0.5	0.75	0.25	2
2	P-102	SAFETY AND SECURITY	LS	0.5	0.5	0.75	0.25	2
3	P-104	PROJECT SURVEY AND STAKEOUT	LS	0.5	0.5	0.75	0.25	2
5	P-105 P-156.501	TEMPORARY CONSTRUCTION ITEMS EROSION CONTROL	LS LS	0.5	0.5	0.75 0.75	0.25	2
6	F-162.501	6' CHAIN LINK FENCE W/ 3 STRANDS BARBED WIRE	LF	421	0.5	0.75	0.25	421
7	F-162.502	6' TEMPORARY CHAIN LINK FENCE	LF	475				475
8	F-162.503	20' VERTICAL PIVOT GATE	LS	1				1
9	F-162.504	10' WIDE x 6' SINGLE LEAF SWING GATE (W/ PRIVACY SLATS)	LS		1			1
10	F-162.505	CHAIN LINK FENCE DESIGN SPECIAL (6' W/ PRIVACY	LF		93			93
11	2100.601/00001 2101.501/00010	RELOCATE BUILDING - TOLL BOOTHS CLEARING	LS ACRE	0.45	2			0.45
13	2101.502/00010		TREE	9				9
14	2101.506/00010		ACRE	0.45				0.45
15	2101.507/00010		TREE	9				9
16	2103.501/00010	BUILDING REMOVAL (GARAGE) REMOVE SEWER PIPE (STORM)	LS LF	1 605	1122			1 1727
18	2104.501/00035		LF	715	1122			715
19	2104.501/00062		LF	4000				4000
20	2104.505/00110		SY	275				275
21	,	REMOVE BITUMINOUS PAVEMENT	SY	18500 8	1.4			18500
22		REMOVE MANHOLES OR CATCH BASINS SAWING CONCRETE PAVEMENT (FULL DEPTH)	EACH LF	60	11			19 60
24	2104.513/00011		LF	1150				1150
25	2105.503/00010	ROCK EXCAVATION	CY	1000	1000			2000
26	2105.505/00010		CY	1000	1000			2000
27 28	2105.515/00010 2105.521/00032	UNCLASSIFIED EXCAVATION GRANULAR BORROW MOD 7% (CV)	CY	56200 14500	37406 17000			93606 31500
29	2105.525/00030	` '	CY	2200	1450			3650
30	2211.503/00050		CY	7750	11400			19150
31		AGGREGATE SHOULDERING (CV) CLASS 1	CY	90				90
32	2357.502/00010		GAL	1825	3000			4825
33	2358.501/00010 2360.501/23600		GAL TON	4550 2400	7475 3945			12025 6345
35	2360.502/23600	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	TON	4800	3945			8745
36	2401.515	SIDEWALK CONCRETE (MIX #3A32) W/ 6" x 6" WWF	SF	3600	2650			6250
37	2401.521/00030		CY	200	200			400
38	2411.507	CONCRETE RETAINING WALL	EACH	1				1 1 1 2
39 40	2501.511 2501.515	24" CORRUGATED HDPE PIPE CULVERT 24" CORRUGATED HDPE PIPE APRON	LF EACH	112				112
41	2502.541	4" PERFORATED (PVC) PIPE UNDERDRAIN SDR 35	LF	7057	3957			11014
42	2503.511	12" CORRUGATED HDPE PIPE SEWER	LF	1049	605			1654
43	2503.511	18" CORRUGATED HDPE PIPE SEWER	LF	1440	24			1464
44	2503.511 2503.511	24" CORRUGATED HDPE PIPE SEWER 30" CORRUGATED HDPE PIPE SEWER	LF LF	506 341				506 341
46	2503.511	36" CORRUGATED HDPE PIPE SEWER	LF	130				130
47	2503.511/13060		LF	45				45
48	2503.511/13080	\ /	LF	274				274
49	2503.573	INSTALL 12" HDPE APRON SECTION	EACH	4				4
50 51	2503.573 2503.573	INSTALL 18" HDPE APRON SECTION INSTALL 24" HDPE APRON SECTION	EACH EACH	1				1
52	2503.573	INSTALL 30" HDPE APRON SECTION	EACH	2				2
53	2503.573	INSTALL 36" HDPE APRON SECTION	EACH	1				1
54	2503.602/00061		EACH	1				1
55 56	2503.602	CONNECT TO EXISTING STORM MANHOLE CONNECT TO EXISTING SANITARY SEWER	EACH EACH	1				4 1
57	2504.602/00024		EACH	4				4
58	2504.603	4" PVC IRRIGATION CONDUIT -SDR 35	LF	246	1297			1543
59		6" WATERMAIN DUCTILE IRON CL 53	LF	351				351
60	2504.603/01083		LF	589				589
61	2505.603/02020 2506.502	2" HP POLYETHYLENE GAS MAIN CONSTRUCT DRAINAGE STRUCTURE TYPE G	LF EACH	796 15	10			796 25
63	2506.502	CONSTRUCT DRAINAGE STRUCTURE TYPE F	EACH	4	10			4
64	2506.502	CONSTRUCT DRAINAGE STRUCTURE TYPE 48 - 4020	EACH	18	2			20
65	2506.502	CONSTRUCT DRAINAGE STRUCTURE TYPE 60 - 4020	EACH	8				8
66	2506.502 2506.502	CONSTRUCT DRAINAGE STRUCTURE TYPE 72 - 4020	EACH	3				3
67 68	2506.502 2506.503	CONSTRUCT DRAINAGE STRUCTURE TYPE 84 - 4020 RECONSTRUCT DRAINAGE STRUCTURE	EACH LF	3.6				3.6
69	2506.521	INSTALL CASTING	EACH	2				2
70	2506.521	SANITARY CASTING	EACH	2				2
71	2506.522/00011		EACH	2	1			3
72 73	2506.602/00011 2511.501	MANHOLE (SANITARY) RANDOM RIPRAP CLASS III	EACH CYD	100				100
74	2511.501	RANDOM RIPRAP CLASS IV	CYD	175				175
75	2521.618/00050	BRICK WALK	SF	400				400
76	2531.501/02120		LF		300			300
77	2531.501/02320		LF	9500	5700			15200
78	,	CONCRETE MEDIAN (NOSE)	SY	8				
79	2531.618	CONSTRUCT PEDESTRIAN RAMP (w/ TRUNCATED DOMES)	EACH	6	19			25
80		1" NON-METALLIC CONDUIT (PVC)	LF			6560	4210	10770
81		2" NON-METALLIC CONDUIT (PVC)	LF			5120		5120
82	2545.523/00103	4" NON-METALLIC CONDUIT (PVC)	LF			395		395
83	2550.512/00010	QUAZITE CAT. NO. PG2436BB36 ELECTRICAL HANDHOLE w/PG2436HA00 LID OR APPROVED EQUAL	EACH			4		4
84	2550.531/11219	TELEPHONE CABLE 10 PR NO 19	LF			1325		1325
							-	-

			BID DIVI		ISION #1	BID DIVISION #2		
				ACCESS RO	AD AND SITE	SITE ELE	CTRICAL	
				SCHEDULE A	SCHEDULE B	SCHEDULE A SCHEDULE B		ĺ
					PARKING LOT		PARKING LOT	TOTAL
BID				ESTIMATED	ESTIMATED	ESTIMATED	ESTIMATED	ESTIMATED
ITEM	SPEC. NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY
85	2550.531/112519		LF			960		960
86	2550.532/11040	POWER CABLE 1 CONDUCTOR NO 4 (EQUIPMENT	LF			7995	4490	12485
87	2550.532/11060	GROUND)	LF					12035
88	2550.532/11080	POWER CABLE 1 CONDUCTOR NO 6 POWER CABLE 1 CONDUCTOR NO 8	LF LF			8190 9675	3845 5140	12035
- 00	2330.332/11080	INSTALL SIGN TYPE A, STOP SIGN, R1-1 (COMPLETE				90/5	5140	
89	2564.537/00010	W/ POST)	EACH	4				
		INSTALL SIGN TYPE A, SPEED LIMIT 20 SIGN, R2-1						
90	2564.537/00010	(COMPLETE W/ POST)	EACH	1				
	2564.537/00010	INSTALL SIGN TYPE A, ONE WAY SIGN, R6-2R	EACH	3				
91	2304.3377 00010	(COMPLETE W/ POST)	LACII	3				
92	2564.537/00010	INSTALL SIGN TYPE A, HANDICAP SIGN, R7-8m	EACH		18			
-	,	(COMPLETE W/ POST)						
93	2564.537/00010	INSTALL SIGN TYPE A, TWO WAY TRAFFIC SIGN, W6-3 (COMPLETE W/ POST)	EACH	1				
93		INSTALL SIGN TYPE A, DOUBLE ARROW SIGN, W12-1						
94	2564.537/00010	(COMPLETE W/ POST)	EACH	4				
		INSTALL SIGN TYPE A, BEGIN ONE WAY SIGN, R6-X1						
95	2564.537/00010	(COMPLETE W/ POST)	EACH	1				
0.0	0504577 (00040	INSTALL SIGN TYPE A, END ONE WAY SIGN, R6-X1	E 4 011					
96	2564.537/00010	(COMPLETE W/ POST)	EACH	1				
97	2573.502	SILT FENCE TYPE MACHINE SLICED	LF	4410				4410
98	2573.502	SILT FENCE TYPE HEAVY DUTY	LF	656				656
99	2573.502	SILT FENCE TYPE SUPER DUTY	LF	343				343
100	2573.530	STORM DRAIN INLET PROTECTION	EACH	48	12			60
101	2573.540 2573.550	FILTER LOG TYPE STRAW BIOROLL EROSION CONTROL SUPERVISOR	LF LS	800 0.7	0.3			800
102	2373.330	EROSION CONTROL SUPERVISOR	LS	0.7	0.3			'
103	2573.601	STORM CHAMBER DETENTION SYSTEM WEST 13,500 CF	LS	1				1
104	2573.601	STORM CHAMBER DETENTION SYSTEM EAST 16,700 CF	LS		1			1
105	2573.602	WATER QUALITY UNIT	EACH	1	1			2
106	2573.604	ROCK CONSTRUTION ENTRANCE	SY	1200				1200
107	2575.501/00010	SEEDING	ACRE	1.9	0.2			2.1
108	2575.502	SEED MIXTURE 250	LBS	237	25			262
109	2575.505/00030		SY	4709	1915			6624
110	2575.523	EROSION CONTROL BLANKET CATEGORY 2	SY	7995	0.0			7995
111	2575.532	FERTILIZER TYPE 1 10-10-10	LBS	760	80			840
112	2575.560 2575.572	HYDRAULIC SOIL STABILIZER, TYPE 6 RAPID STABILIZATION METHOD 4	LBS	3360 8294	420 1080			3780 9374
114	2575.604/00003		SY	25647	1080			25647
115	2582.501/01001		EACH	6				6
116	2582.501/01002	PAVEMENT MESSAGE (RIGHT ARROW) PAINT	EACH	3				3
117	2582.501/01007	PAVEMENT MESSAGE (RIGHT-THRU ARROW) PAINT	EACH	2				2
118	2582.501/01010	PAVEMENT MESSAGE (HANDICAPPED SYMBOL) PAINT	EACH		18			18
119	2582.502/11104	4" SOLID LINE WHITE-PAINT	LF	3000	18600			21600
120	2582.502/11304	4" DOTTED LINE WHITE-PAINT	LF	1125				1125
121	2582.502/11524	24" STOP LINE WHITE-PAINT	LF	105				105
122	2582.502/12104	4" SOLID LINE YELLOW-PAINT	LF	2200	0.40			2200
123	2582.503/00110 SP 38.3	CROSSWALK MARKING-PAINT ALLOWANCE FOR MN POWER UTILITITY RELOCATION	SF AL	75 1	940			1015
125	SP 39.3	ALLOWANCE FOR MN POWER UTILITITY RELOCATION	AL	1				1
		CONCRETE TRAFFIC BARRIER (MARKSTAAR MODEL B-96)						
126	SP 40.3	OR APPROVED EQUAL	EACH	15	41			56
127	SP 41.3	TRAFFIC CONTROL ALLOWANCE	AL	1				1
128	SP 42.3	PRIVATE UTILTITY LOCATING SERVICE	LS	1				1
	SP 43.3	ENTRANCE AND EXIT GATES W/ DETECTOR LOOPS W/	EACH		7			7
129	3F 43.3	FOUNDATION	LACH		/			,
130	SP 44.3	RELOCATE EXIT GATES W/ DETECTOR LOOPS W/ NEW	EACH					0
		FOUNDATION						_
	SP 45.3	PROVIDE AND INSTALL AUTOMATIC PAY STATION W/	EACH		1			1
131		FOUNDATION PROVIDE AND INSTALL TICKET DISPENSORS W/						
132	SP 46.3	FOUNDATION	EACH		6			6
133	SP 47.3	RELOCATE TICKET DISPENSORS W/ NEW FOUNDATION	EACH	-	-	-	-	0
		RELOCATE AUTOMATIC PAY STATION W/ NEW						0
134	SP 48.3	FOUNDATION	EACH	1	1	1	1	1
135	SP 49.3	LIGHTING UNIT, TYPE A W/ FOUNDATION	EACH			9	20	29
		LIGHTING UNIT, TYPE B W/ FOUNDATION	EACH			26	4	30
136	SP 50.3				.	· ·		
136	SP 50.3 SP 52.3	LIGHTING REMOVAL	EACH		12			12
		LIGHTING REMOVAL ALLOWANCE FOR WAY FINDING SIGNS LANDSCAPING ALLOWANCE	EACH AL		12			12



Reynolds, Smith and Hills, Inc. 4525 Airport Approach Road, Ste A Duluth, Minnesota 55811 218-722-1227 FAX 218-722-1052 www.rsandh.com



REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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 under the laws of the State of Minnesota.

Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

REVISIONS

NO.	DESCRIPTION	DATE			

DATE ISSUED: 05-11-2009 REVIEWED BY: BCT

DRAWN BY: RDRE DESIGNED BY: JEH

AEP PROJECT NUMBER

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SHEET TITLE

SUMMARY OF **QUANTITIES**

SHEET NUMBER

C002

SAFETY REQUIREMENTS

- 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).
- 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. IT THESE MATERIALS ARE OBSERVED TO BE ON AIRSIDE PAVEMENTS, THEY WILL BE REMOVED IMMEDIATELY AND/OR CONTINUOUSLY BY THE CONTRACTOR DURING CONSTRUCTION.
- 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:

- d. 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 ABORMAL 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 HIS THE CONDRINIS 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:

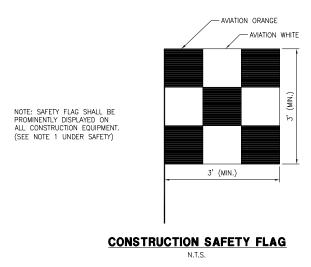
*BARRICADES SET PROPERLY AND ALL FLASHING WARNING LIGHTS OPERATING PROPERLY.
*ALL CONTRACTOR PERSONNEL AND EQUIPMENT ACCESS GATES MANNED AND SECURITY PROCEDURES IN

*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 FLICHT 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.
- THE CONTRACTOR SHALL TAKE ALL STEPS TO PROTECT THE EXISTING UNDERGROUND CABLES AND COMMERCIAL, AIRPORT AUTHORITY AND MILITARY UILITIES DURINIG CONSTRUCTION TO ASSURE CONTINUOUS OPERATION OF LIGHTS AND NAVIGATIONAL AIDS WHEN NEEDED.
- 8. MATERIALS STORED 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.
- 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 150/5370-27).
- 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.



SECURITY REQUIREMENTS

- 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.
- 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 THE STEPONSHEL WHICH ARE FAMILIAR WITH THE REQUIREMENTS OF THE AIRPORT OPERATIONS SECURITY PROGRAM. THE CONTRACTOR IS RESPONSIBLE FOR THE IMMEDIATE LEERANUP OF ANY DEBRIS DEPOSITED ALONG 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 ARPORT. THE NAME "DULLUTH 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 NUMBERICALLY 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 RETUINED TO THE AIRPORT AND A CHARGE OF \$50 PER BADGE WILL BE ASSESSED FOR ALL BADGES NOT RETURNED. IN ADDITION, A \$20 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. 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 ALL OPEN ONLY ONLY THE AND A THE AND AT THE AND AT AND TIME.
- CONTRACTOR EMPLOYEE VERIFICES STALL BE, RESTRICTED TO THE CONTRACTOR'S EMPLOYEE FAIRNING ANCA AND ARE NOT ALLOWED ON THE AGA 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 TAXIMAY 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 TO VERIFY ALL UNDERGROUND CABLE LOCATIONS IN THE VICINITY OF THE PROPOSED WORK:

 CABLE OWNER
 CONTACT PERSON
 PHONE NUMBER

 FEDERAL AVIATION ADMINISTRATION M. AIR NATIONAL GUARD
 ANDY GOMEZ
 218-722-2826

 Mn. AIR NATIONAL GUARD
 WORK CONTROL
 218-723-7292

 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 FAB FACILITIES AND FAB CABLES.



Reynolds, Smith and Hills, Inc. 4525 Airport Approach Road, Ste A Duluth, Minnesota 55811 218-722-1227 FAX 218-722-1052 www.rsandh.com



REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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 under the laws of the State of Minnesota.

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Signat	ure (100	m	ZM	pale
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yped	Name*	JOHN	E.	HIPPCH	EN

Date 05/07/2009 Reg. No. 22088

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DATE ISSUED: 05-11-2009
REVIEWED BY: BCT

DESIGNED BY: JEH

DRAWN BY:

AEP PROJECT NUMBER

RDRE

214-1882-093 & 095 © 2009 REYNOLDS, SMITH AND HILLS INC.

SHEET TITLE

SAFETY AND SECURITY NOTES AND DETAILS

SHEET NUMBER

C003

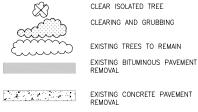
GENERAL NOTES

- 1. SAFETY AND SECURITY SAFETY AND SECURITY IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE COORDINATED WITH DULUTH INTERNATIONAL AIRPORT AND THE ENGINEER (SEE SPECIAL PROVISION
- 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 REPARED 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
- 3. CONTRACTOR UTILITIES THE CONTRACTOR'S STAGING AREA IS SHOWN ON SHEET COO6. 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
- 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 REQULATIONS. 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
- 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 RACTOR 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. <u>PERMITS:</u> IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN AND PAY FOR ALL APPLICABLE PERMITS FOR CONSTRUCTION AND EQUIPMENT.
- 21. <u>COORDINATION OF CONSTRUCTION ACTIVITIES:</u> 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.

LEGEND

	2/C #6 THHN 600V, 1/C #4 GR IN CONDUIT
	4/C #8 THHN 600V, 1/C #4 GR IN CONDUIT
	2/C #8 THHN 600V, 1/C #4 GR IN CONDUIT
UEDUED	PROPOSED CONDUIT DUCTS
OHE	PROPOSED OVERHEAD ELECT.
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UE UE	EXISTING UNDERGROUND ELECT.
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ит ит	PROPOSED PHONE CABLES
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UG	EXISTING GAS LINE
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А	EXISTING HYDRANT
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H	PROPOSED WATER VALVE
₩V	EXISTING WATER VALVE
========	PROPOSED STORM PIPE
	PROPOSED EDGE DRAINS
$-\!\!\!-\!\!\!\!-\!\!\!\!-\!\!\!\!-\!\!\!\!-\!\!\!\!\!-\!\!\!\!\!-\!\!\!\!$	EXISTING STORM PIPE

DEMOLITION



DEMOLISH EXISTING BUILDING OR SALVAGE

EXISTING CURB REMOVAL

SAWCUT BITUMINOUS PAVEMENT (FULL DEPTH)

GRADING AND EROSION

CONTRO	L LEGEND
1270	PROPOSED MAJOR CONTOUR (5')
1267	PROPOSED MINOR CONTOUR (1')
- — — 1270 — — —	EXISTING MAJOR CONTOUR (5')
- — — 1268 — — —	EXISTING MINOR CONTOUR (1')
	PROPOSED GRADING LIMITS
2Ł	SILT FENCE TYPE: MACHINE SLICED
	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

	ABBRE\	/IATIONS
	AB	AGGREGATE BASE COURSE
	AC	ADVISORY CIRCULAR OR ASPHALTIC CONCRETE
5')	APPROX	APPROXIMATE
41\	ARFF	AIRCRAFT RESCUE FIRE FIGHTING
1')	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
1	DIA	DIAMETER
'	E	EASTING, ELECTRICAL OR EAST
Υ	EA	EACH
	EC	END CURVE
	EL	ELEVATION
	EVC	END VERTICAL CURVE
	EXIST	EXISTING
	FAA	FEDERAL AVIATION ADMINISTRATION
,	FH	FIRE HYDRANT
	FL	FLOWLINE
	G	GAS
T	GA	GAUGE
.1	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
IC	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

TAXIWAY

TYPICAL

VERTICAL

WEST OR WATER

VISUAL APPROACH SLOPE INDICATOR

T/W

VASI

VERT

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REPLACEMENT TERMINAL AREA DEVELOPMENT. LANDSIDE SITE PHASE I

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Signature John & Hppher Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

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DATE ISSUED: 05-11-2009

REVIEWED BY: BCT DRAWN BY: DESIGNED BY: JEH

AEP PROJECT NUMBER

214-1882-093 & 095

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SHEET TITLE

GENERAL CONSTRUCTION NOTES, LEGEND, AND **ABBREVIATIONS**

SHEET NUMBER

C004

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SHEET TITLE

ULTIMATE DEVELOPMENT SITE PLAN

SHEET NUMBER

C005

CONTRACT LAYOUT PLAN NOTES

- 1.) PROJECT DESCRIPTION: THIS CONTRACT PROVIDES THE FIRST 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 & CATE INSTALLATION AND REMOVAL; BUILDING DEMOLITION & BUILDING SALVAGE; SITE CLEARING AND GRUBBING; EXCAVATION AND MAINTENANCE OF ERGISION 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; INSTALLATION OF POWER AND CONTROL CABLES FOR PARKING CONTROL DEVICES; TOLL BOOTH RELOCATION; 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.

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



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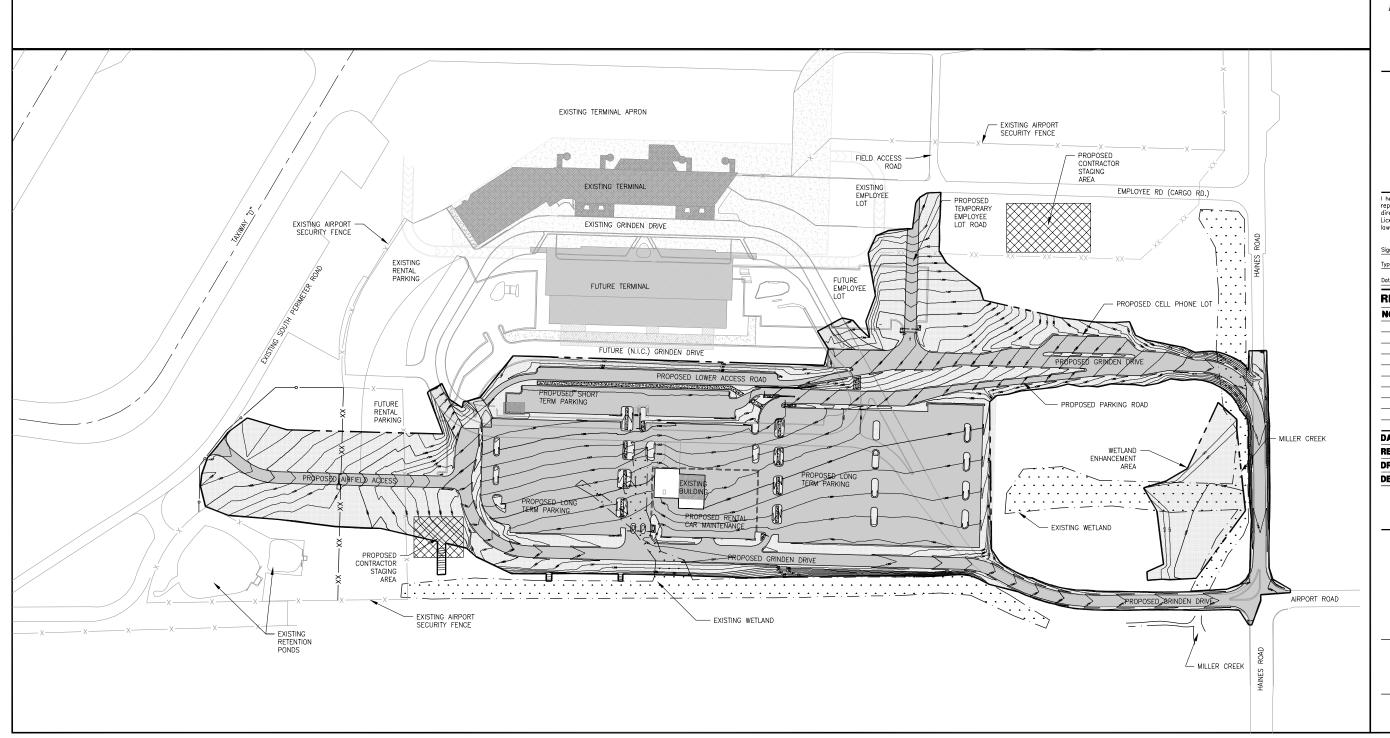
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SHEET TITLE

CONTRACT LAYOUT PLAN & CONTRACT NOTES

SHEET NUMBER

C006



HORIZONTAL AND VERTICAL CONTROL POINTS

NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP-DLHA	N:452663.9980	E:2854470.1940	1404.7870	DIHA 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-51	N:452503.3840	E:2854771.0310	1403.5720	CP-51 IS A 24" #5 REBAR SET FLUSH WITH GROUND, IS 30' SOUTH OF GRINDEN DRIVE ON TOP OF HILL ACROSS FROM LONG TERM PARKING AND 20' WEST OF TOLL BOOTH BUILDING LINE.
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	1409.9000	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		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.

1. ULTIMATE DEVELOPMENT SHOWN FOR INFORMATION.
2. CONTROL POINT INFORMATION PROVIDED BY RLK-INCORPORATED DATE: 03-09-2009

LEGEND

NOTE: ALL NORTHINGS, EASTINGS AND ELEVATIONS LABELED ON THESE PLANS ARE IN: MINNESOTA STATE PLANE NORTH (1996)

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NORTH



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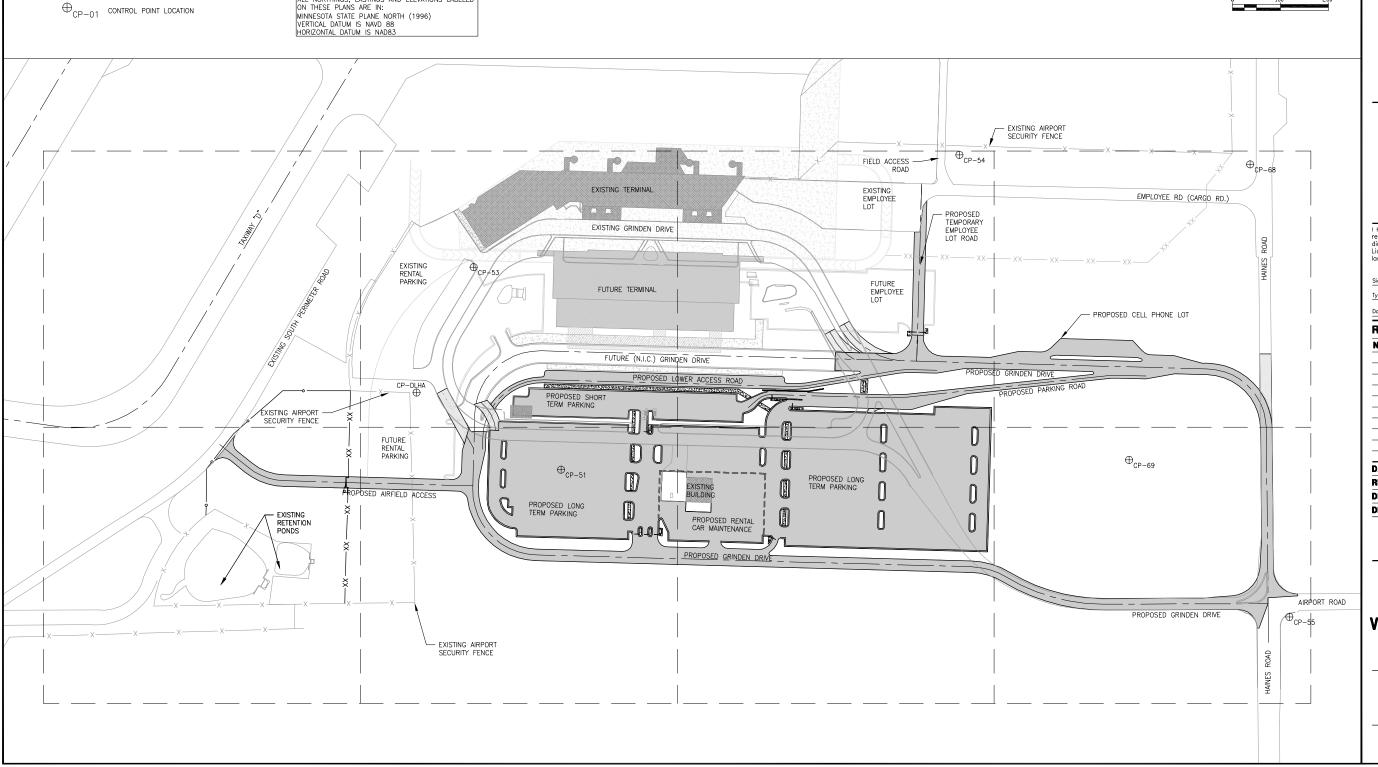
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SHEET TITLE

HORIZONTAL AND **VERTICAL CONTROL** PLAN & NOTES

SHEET NUMBER

C007





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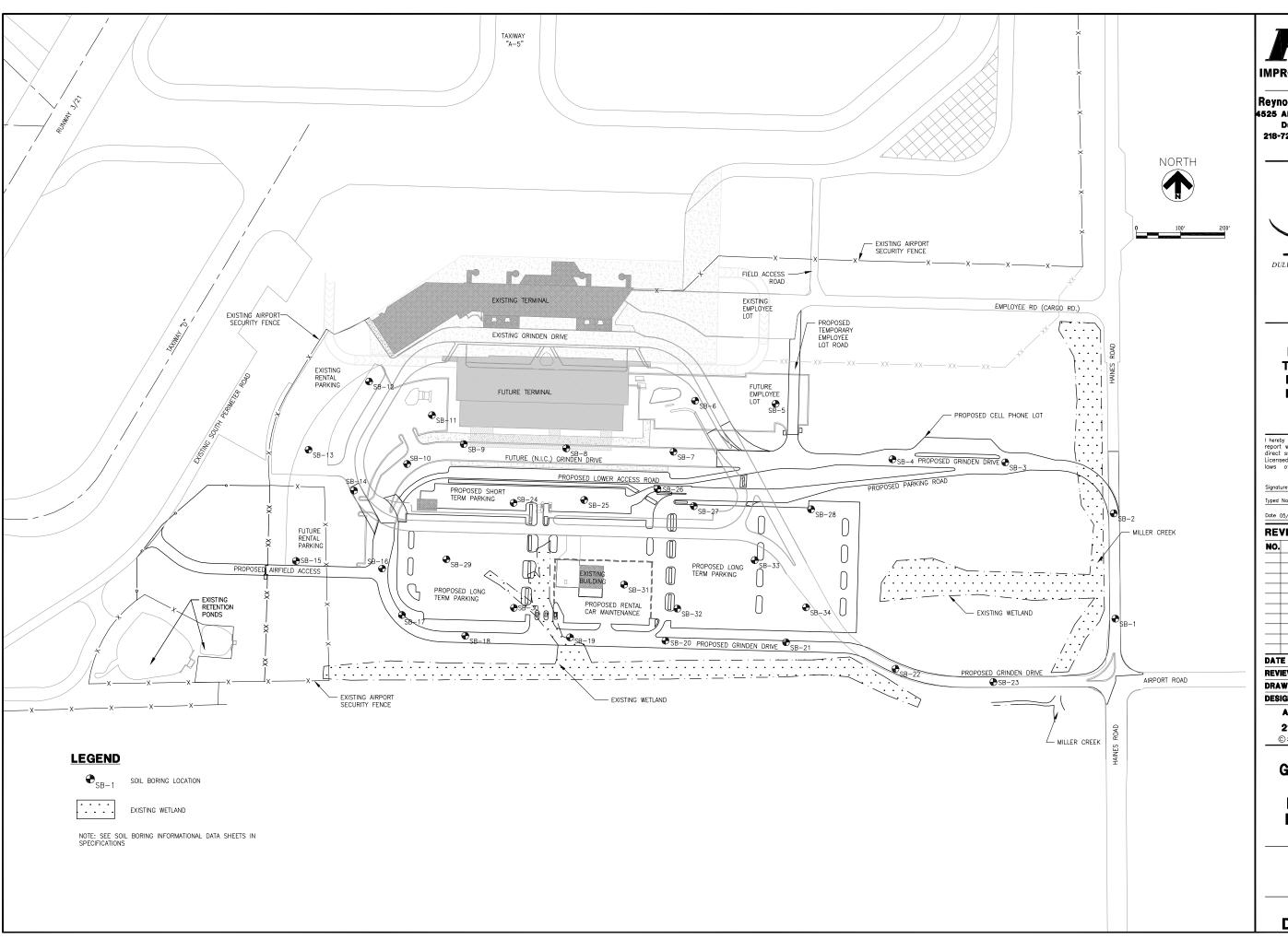
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SHEET TITLE

LAYOUT PLAN

C008





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SHEET TITLE

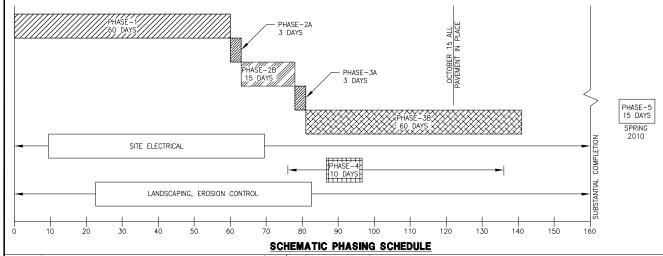
GEOTECHNICAL BORING LAYOUT AND INFORMATION

SHEET NUMBER

C009

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, 2009.
- 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. AFTER COMPLETION OF PHASE 4, THE WORK AND CONTRACT TIME WILL BE SUSPENDED BY THE OWNER. ALL EQUIPMENT, MATERIALS, AND SUPPLIES SHALL BE MOBILIZED TO CONTRACTORS STAGING AREA.
- 5. DEMOBILIZATION AND SITE RESTORATION SHALL BE TO THE SATISFACTION OF THE OWNER PRIOR TO FINAL RELEASE OF PAYMENT.



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.
- 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
- 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
- 7) THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ANY WORK AREAS NEAR TRAFFIC IN ACCORDANCE WITH
- IF THE CONTRACTOR DECIDES TO PERFORM THE CONSTRUCTION WORK IN A SEQUENCE OTHER THAN SHOWN IN IIS 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.
- "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
- 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
- 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.







PHASE 1 CONSTRUCTION LIMITS



PHASE 2A (OFF PEAK) CONSTRUCTION LIMITS



PHASE 2B CONSTRUCTION LIMITS



PHASE 3A CONSTRUCTION LIMITS



PHASE 3B CONSTRUCTION LIMITS



PHASE 4 CONSTRUCTION LIMITS



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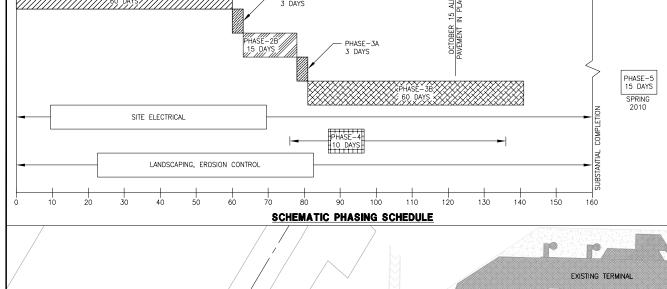
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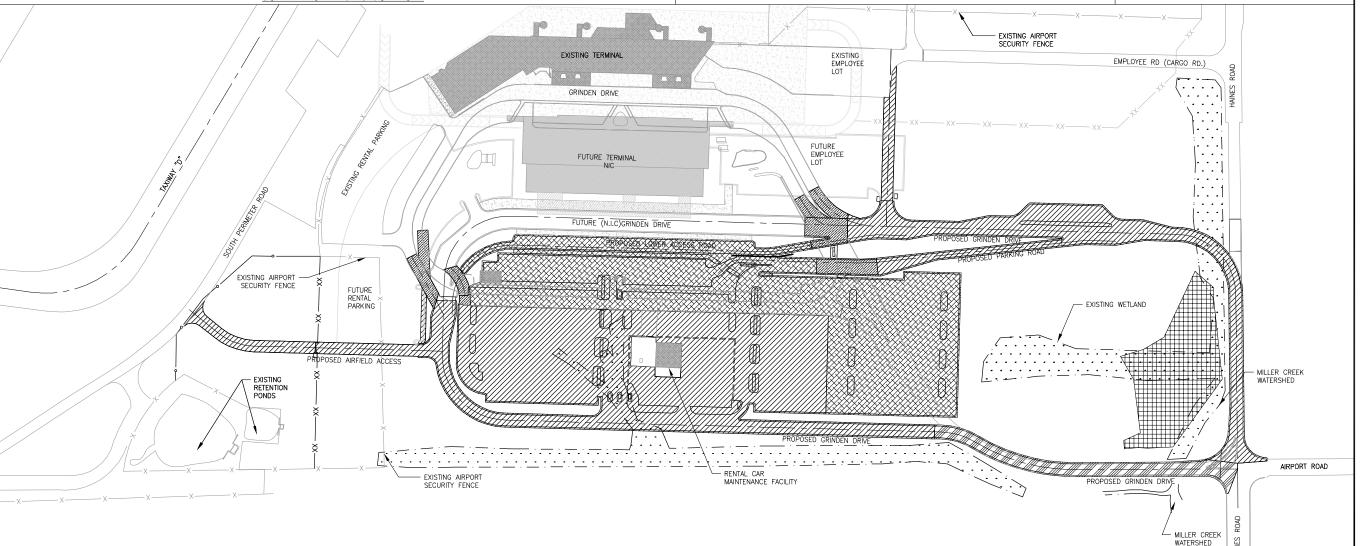
SHEET TITLE

OVERALL PHASING PLAN

SHEET NUMBER

C010





PHASING 1 (60 CONSECUTIVE CALENDAR DAYS)

PHASE 1 SHALL CONSIST OF CONSTRUCTION OF THE PROPOSED GRINDEN DRIVE OVER THE EXISTING HAINES ROAD FROM STA: 0+93 TO STA: 13+25, PROPOSED EMPLOYEE LOT ROAD, PROPOSED CELL PHONE LOT, PROPOSED PARKING ROAD STA: 10-400 TO STA: 5+00, PROPOSED AIRFIELD ACCESS. TEMPORARY FENCE, AND SOUTHWEST HALF PROPOSED PARKING. TRAFFIC TO TERMINAL AND PARKING SHALL USE EXISTING GRINDEN DRIVE AND SHALL NOT BE RESTRICTED AT ANY TIME DURING THIS PHASE. THE ACCESS TO THE RENTAL CAR REPAIR FACILITY AND FUELING SHALL BE MAINTAINED.

THE WORK PERFORMED IN THIS PHASE SHALL INCLUDE BUT NOT LIMITED TO;

1. TEMPORARY FENCE INSTALLATION

2. EXCAVATION AND GRADING

3. UTILITY REMOVAL AND INSTALLATION

- STORM SEWER INSTALLATION
- CONCRETE CURB AND GUTTER INSTALLATION ASPHALT PAVING

- 7. TOLL BOOTH SALVAGE/INSTALLATION 8. CREDIT CARD PAY STATION INSTALLATION 9. FENCE REMOVAL 10. TICKET DISPENSER INSTALLATION

LEGEND





DIRECTION OF TRAFFIC FLOW





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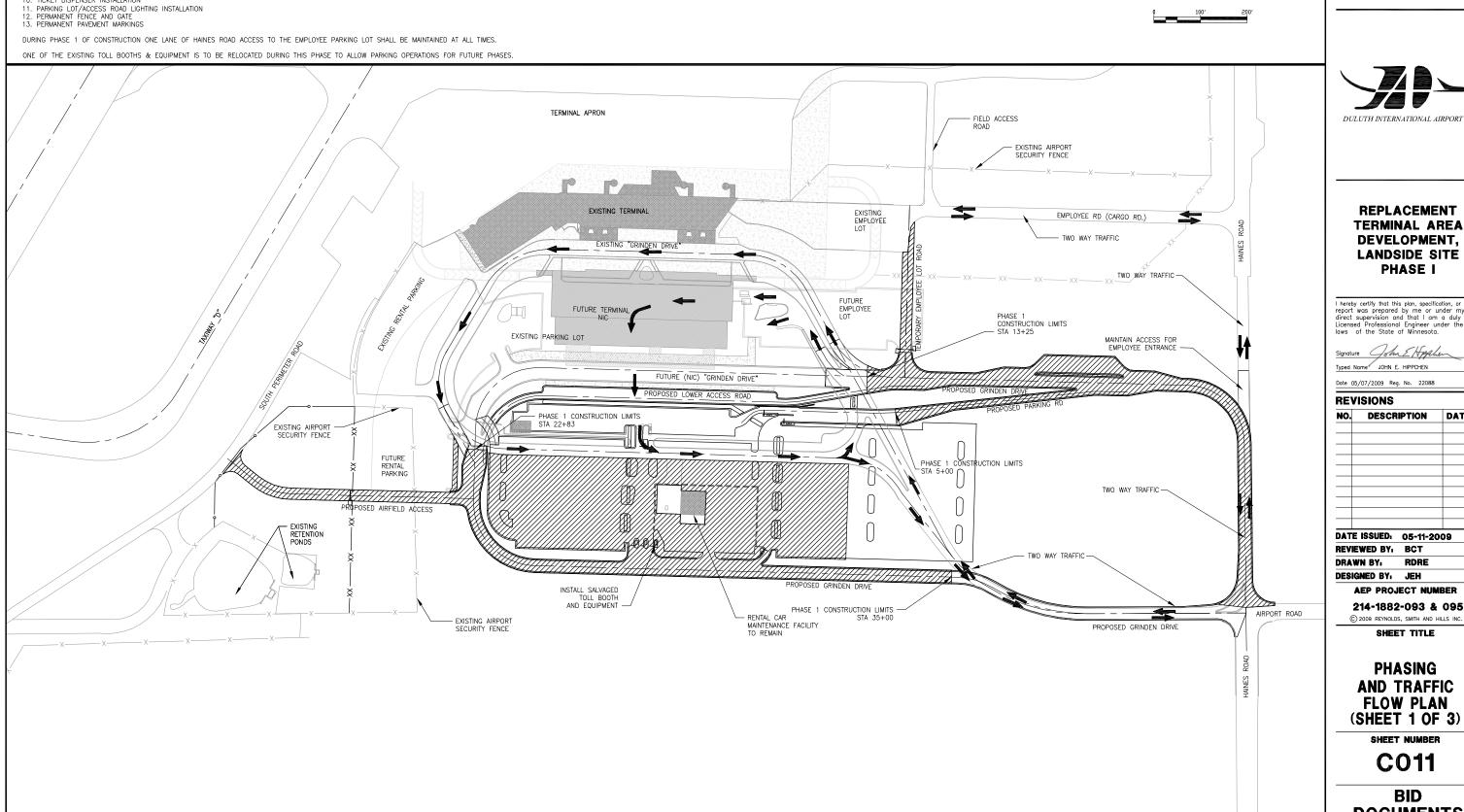
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SHEET TITLE

PHASING AND TRAFFIC FLOW PLAN (SHEET 1 OF 3)

SHEET NUMBER

C011



PHASING 2A (3 CONSECUTIVE CALENDAR DAYS)

FOLLOWING THE COMPLETION OF PHASE 1, PHASE 2A CAN COMMENCE. PHASE 2A SHALL CONSIST OF CONSTRUCTING THE CROSSOVERS NECESSARY TO CONNECT THE NORTHEAST PORTION OF THE PHASE 1 CONSTRUCTION WITH THE EXISTING GRINDEN DRIVE AND LOWER GRINDEN LOOP. PHASE 2A SHALL TAKE PLACE AT NIGHT (MIDNIGHT TO 5:00 AM) TRAFFIC TO TERMINAL & PARKING SHALL BE RESTORED EACH MORNING UNTIL ALL CONNECTIONS ARE COMPLETE. AT FULL COMPLETION OF THIS PHASE TRAFFIC SHALL BE REDIRECTED AND TRAFFIC CONTROL MEASURES SHALL BE IN PLACE. PHASE 2B SHALL NOT COMMENCE BEFORE THE COMPLETION OF PHASE 2A. ACCESS TO TERMINAL AND PARKING LOT SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION OF PHASE 2A & 2B.

THE WORK PERFORMED IN THIS PHASE SHALL INCLUDE BUT NOT BE LIMITED TO;

- PAVEMENT REMOVAL
 ASPHALT PAVING
 CONCRETE CURB AND GUTTER INSTALLATION
- EXCAVATION AND GRADING
 UTILITY REMOVAL AND INSTALLATION
 STORM SEWER INSTALLATION
- 7. PARKING LOT/ACCESS ROAD LIGHTING INSTALLATION 8. PERMANENT PAVEMENT MARKINGS

PHASING 2B (15 CONSECUTIVE CALENDAR DAYS)

FOLLOWING THE COMPLETION OF PHASE 2A. PHASE 2B CAN COMMENCE. PHASE 2B SHALL CONSIST OF CONSTRUCTING THE PROPOSED GRINDEN DRIVE NECESSARY TO CONNECT THE SOUTHEAST PORTION OF THE PHASE 1 CONNECTION WITH HAINES ROAD. ACCESS TO TERMINAL & PARKING LOT SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION OF PHASE 2A & 2B.

THE WORK PERFORMED IN THIS PHASE SHALL INCLUDE BUT NOT BE LIMITED TO:

- PAVEMENT REMOVAL
 ASPHALT PAVING
 CONCRETE CURB AND GUTTER INSTALLATION
- EXCAVATION AND GRADING
- UTILITY REMOVAL AND INSTALLATION STORM SEWER INSTALLATION
- PARKING LOT/ACCESS ROAD LIGHTING INSTALLATION
- PERMANENT PAVEMENT MARKINGS

LEGEND



PHASE 2A (OFF PEAK) CONSTRUCTION



DIRECTION OF TRAFFIC FLOW PHASE 2B CONSTRUCTION LIMITS





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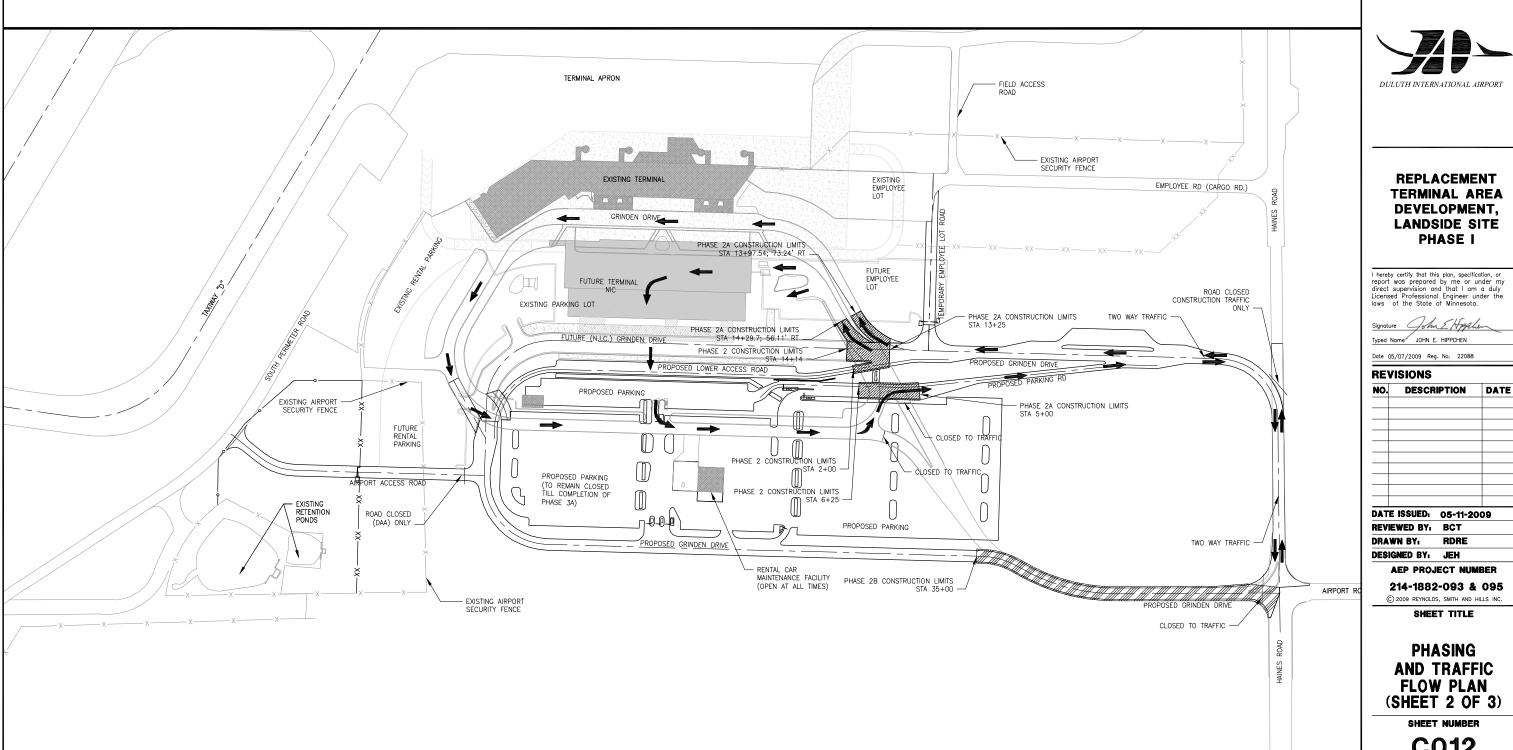
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SHEET TITLE

PHASING AND TRAFFIC FLOW PLAN (SHEET 2 OF 3)

SHEET NUMBER

C012



PHASING 3A (3 CONSECUTIVE CALENDAR DAYS)

FOLLOWING THE COMPLETION OF PHASE 2A AND 2B, PHASE 3A CAN COMMENCE. PHASE 3A SHALL CONSIST OF CONSTRUCTING THE CROSSOVERS NECESSARY TO CONNECT THE NORTHWEST PORTION OF THE PHASE 1 CONSTRUCTION WITH THE EXISTING GRINDEN DRIVE AND PROPOSED GRINDEN DRIVE. PHASE 3A SHALL TAKE PLACE AT NIGHT (MIDNIGHT TO 5:00 AM) TRAFFIC TO TERMINAL & PARKING SHALL BE AT NIGHT (MIDNIGHT 10 3/20 AM) TRAFFIC TO TERMINAL & PARKING SHALL BE RESTORED EACH MORNING UNTIL ALL CONNECTIONS ARE COMPLETE. AT FULL COMPLETION OF THIS PHASE TRAFFIC SHALL BE REDIFECTED AND TRAFFIC CONTROL MEASURES SHALL BE IN PLACE. PHASE 3B SHALL NOT COMMENCE BEFORE THE COMPLETION OF PHASE 3A. ACCESS TO TERMINAL AND PARKING LOT SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION OF PHASE 3A & 3B. BEFORE TRAFFIC IS DIRECTED AS SHOWN ON THIS SHEET, THE TOLL BOOTH SHALL BE OPERATIONAL, AND ALL OTHER AREAS PROPERLY CLOSED.

THE WORK PERFORMED IN THIS PHASE SHALL INCLUDE BUT NOT BE LIMITED TO; 1. PAVEMENT REMOVAL

- ASPHALT PAVING
 EXCAVATION AND GRADING
 UTILITY REMOVAL AND INSTALLATION
- STORM SEWER INSTALLATION
- PERMANENT PAVEMENT MARKING

PHASING 3B (45 CONSECUTIVE CALENDAR DAYS)

FOLLOWING THE COMPLETION OF PHASE 3A, PHASE 3B CAN COMMENCE. PHASE 3B SHALL CONSIST OF CONSTRUCTING PROPOSED LOWER ACCESS ROAD, PROPOSED PARKING ROAD AND PARKING LOT CONNECTING TO NORTHERN EDGE OF PHASE 1 CONSTRUCTION. ACCESS TO TERMINAL AND PARKING LOT SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION OF PHASE 3A & 3B.

THE WORK PERFORMED IN THIS PHASE SHALL INCLUDE BUT NOT BE LIMITED TO; 1. PAVEMENT REMOVAL

- ASPHALT PAVING
- EXCAVATION AND GRADING
 UTILITY REMOVAL AND INSTALLATION
 STORM SEWER INSTALLATION

- CONCRETE CURB AND GUTTER INSTALLATION RETAINING WALL TICKET DISPENSER INSTALLATION
- PARKING LOT/ ROAD LIGHTING INSTALLATION TOLL BOOTH INSTALLATION
- 11. LANDSCAPING / SODDING 12. PERMANENT PAVEMENT MARKINGS

PHASING 4 (7 CONSECUTIVE CALENDAR DAYS)

FOLLOWING THE COMPLETION OF PHASE 3A, PHASE 4 CAN COMMENCE. PHASE 4 SHALL CONSIST OF CONSTRUCTING WETLANDS ADJACENT TO EXISTING WETLANDS IN THE SOUTHEAST CORNER OF THE PROJECT AREA AND SODDING AND LANDSCAPING SITE.

THE WORK PERFORMED IN THIS PHASE SHALL INCLUDE BUT NOT BE LIMITED TO;

- EXCAVATION AND GRADING
 WETLAND PLANTING AND TURF ESTABLISHMENT
- SODDING AND SEED/ MULCH
- 4. LANDSCAPING

PHASING 5 (15 CONSECUTIVE CALENDAR DAYS) (NOT SHOWN)

AFTER WINTER SUSPENSION HOLD OF CONTRACT PHASE 5 CAN COMMENCE IN SPRING.

THE WORK PERFORMED IN THIS PHASE SHALL INCLUDE BUT NOT BE LIMITED TO; 2. WETLAND PLANTING AND TURF ESTABLISHMENT

- 3. SODDING AND SEED/ MULCH 4. LANDSCAPING

LEGEND



PHASE 3A CONSTRUCTION LIMITS



PHASE 3B CONSTRUCTION LIMITS



PHASE 4 CONSTRUCTION LIMITS



DIRECTION OF TRAFFIC FLOW





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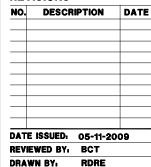
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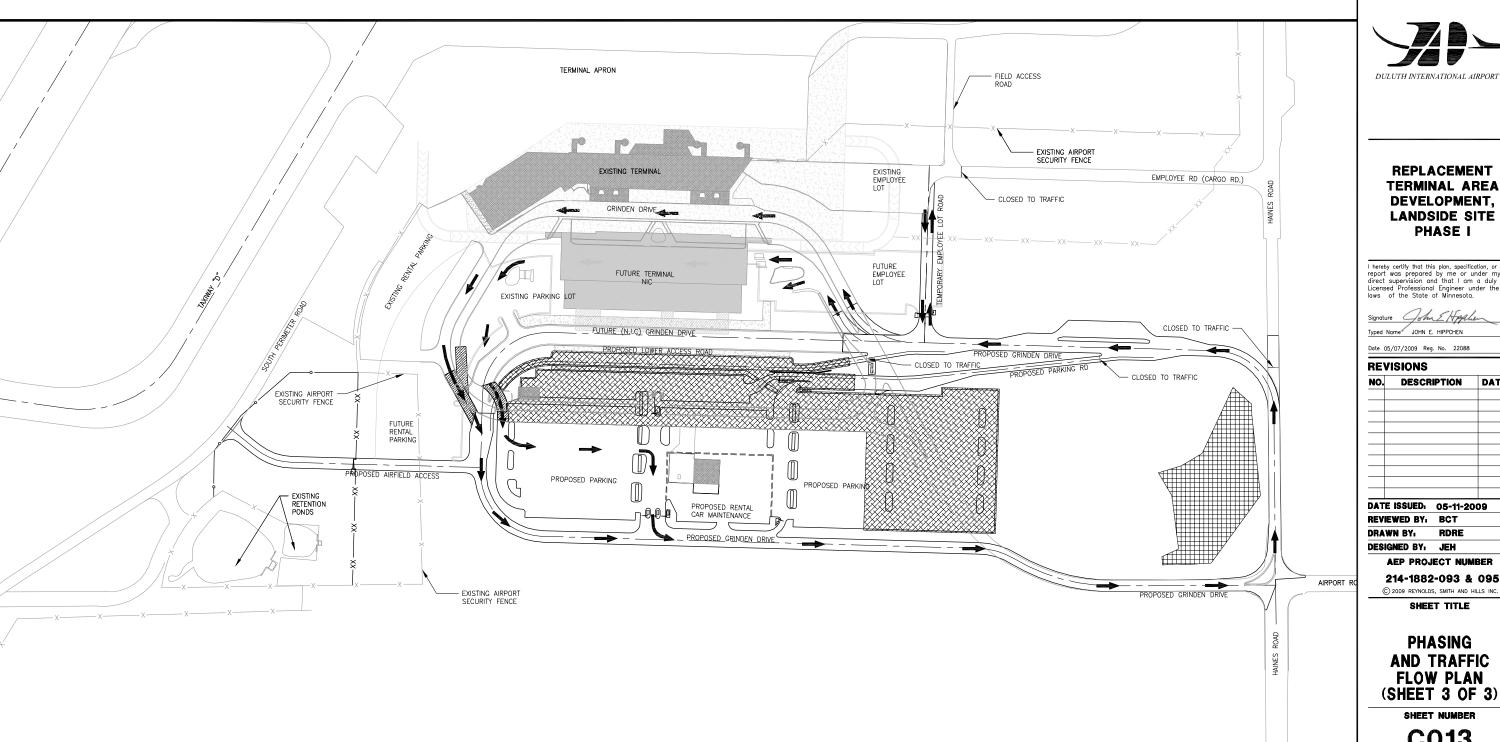
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SHEET TITLE

PHASING AND TRAFFIC FLOW PLAN (SHEET 3 OF 3)

SHEET NUMBER

C013



DEMOLITION NOTES

- SEE SHEETS E100 TO E108 FOR ELECTRICAL DEMOLITION,
- 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.
- 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 1-600-252-1166 TO NOTIFY LOCAL UTILITIES. THIS IS
- 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 CO11-C013.

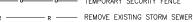
DEMOLITION LEGEND

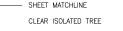
X EXISTING FENCE TO REMAIN --- REMOVE EXISTING AIRFIELD



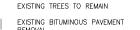
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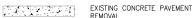


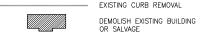






SAWCUT BITUMINOUS PAVEMENT





(FULL DEPTH)

NORTH

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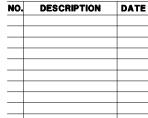
REPLACEMENT TERMINAL AREA DEVELOPMENT. LANDSIDE SITE PHASE I

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 under the laws of the State of Minnesota.

Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Req. No. 22088

REVISIONS



DATE ISSUED: 05-11-2009 REVIEWED BY: BCT

DRAWN BY: LAD DESIGNED BY: JEH

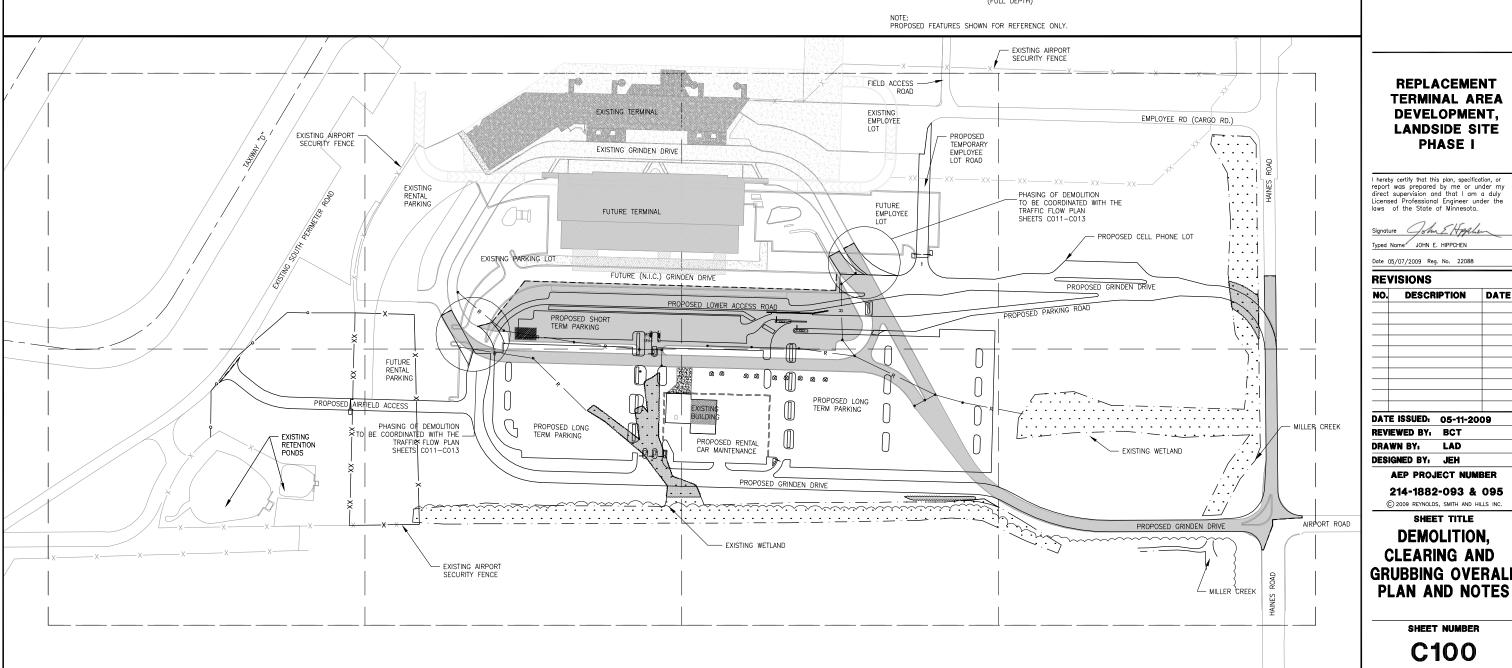
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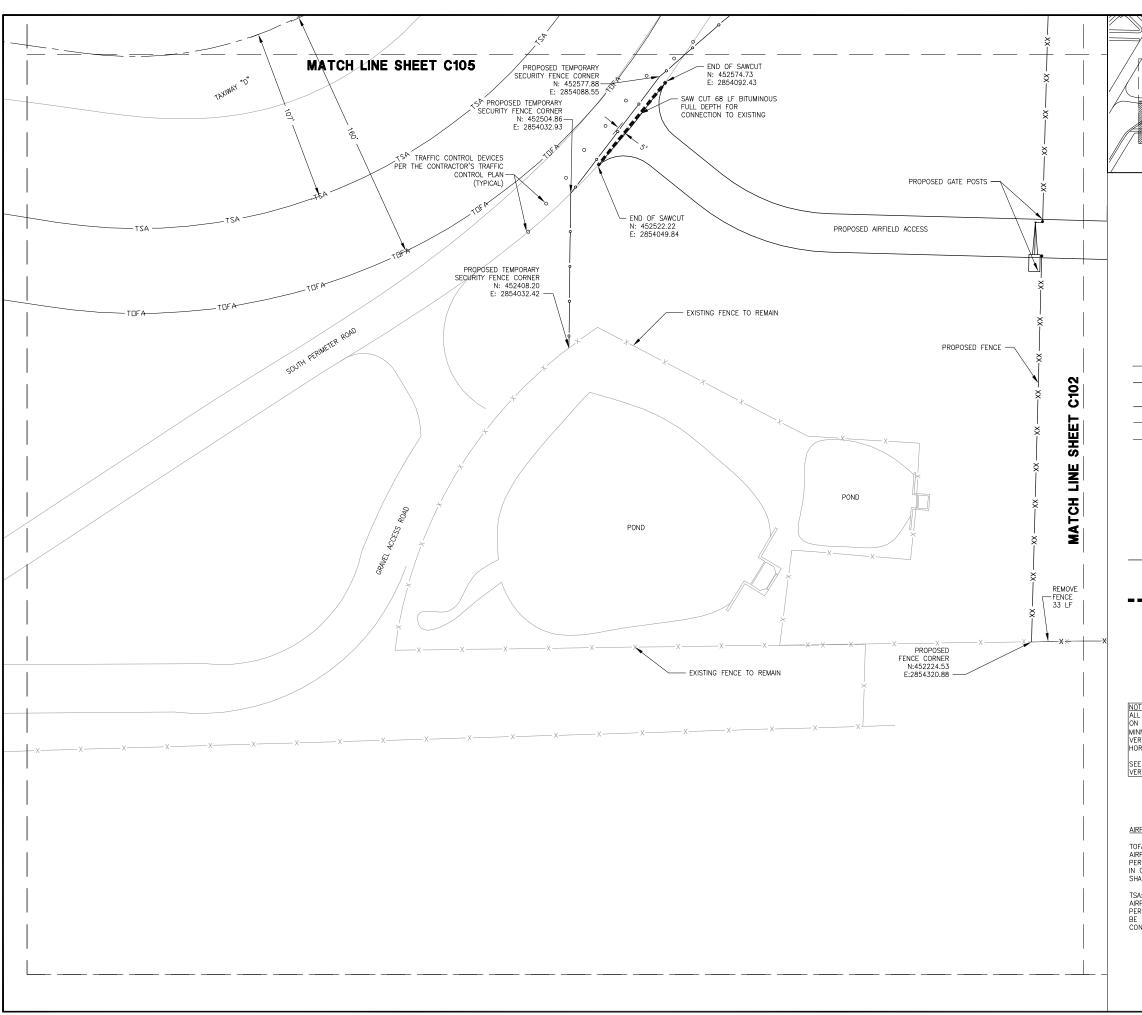
> © 2009 REYNOLDS, SMITH AND HILLS INC. SHEET TITLE

DEMOLITION, CLEARING AND GRUBBING OVERALL

SHEET NUMBER

C100







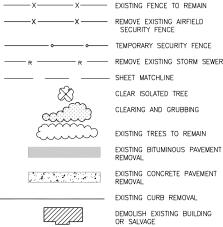
NORTH



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DEMOLITION LEGEND



NOTE:

PROPOSED FEATURES SHOWN
FOR REFERENCE ONLY.

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

(FULL DEPTH)

SAWCUT BITUMINOUS PAVEMENT

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 NADB3

SEE SHEET COO7 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 PERSONEL 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 VEHHICLES ENTERIND THE AREA TO BE IN CONTACT WITH THE FAA TOWER. THE CONTRACTOR SHALL NOT ENTER THIS AREA.

REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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Signature John L. Hipphen
Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

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DATE ISSUED: 05-11-2009
REVIEWED BY: BCT

DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER

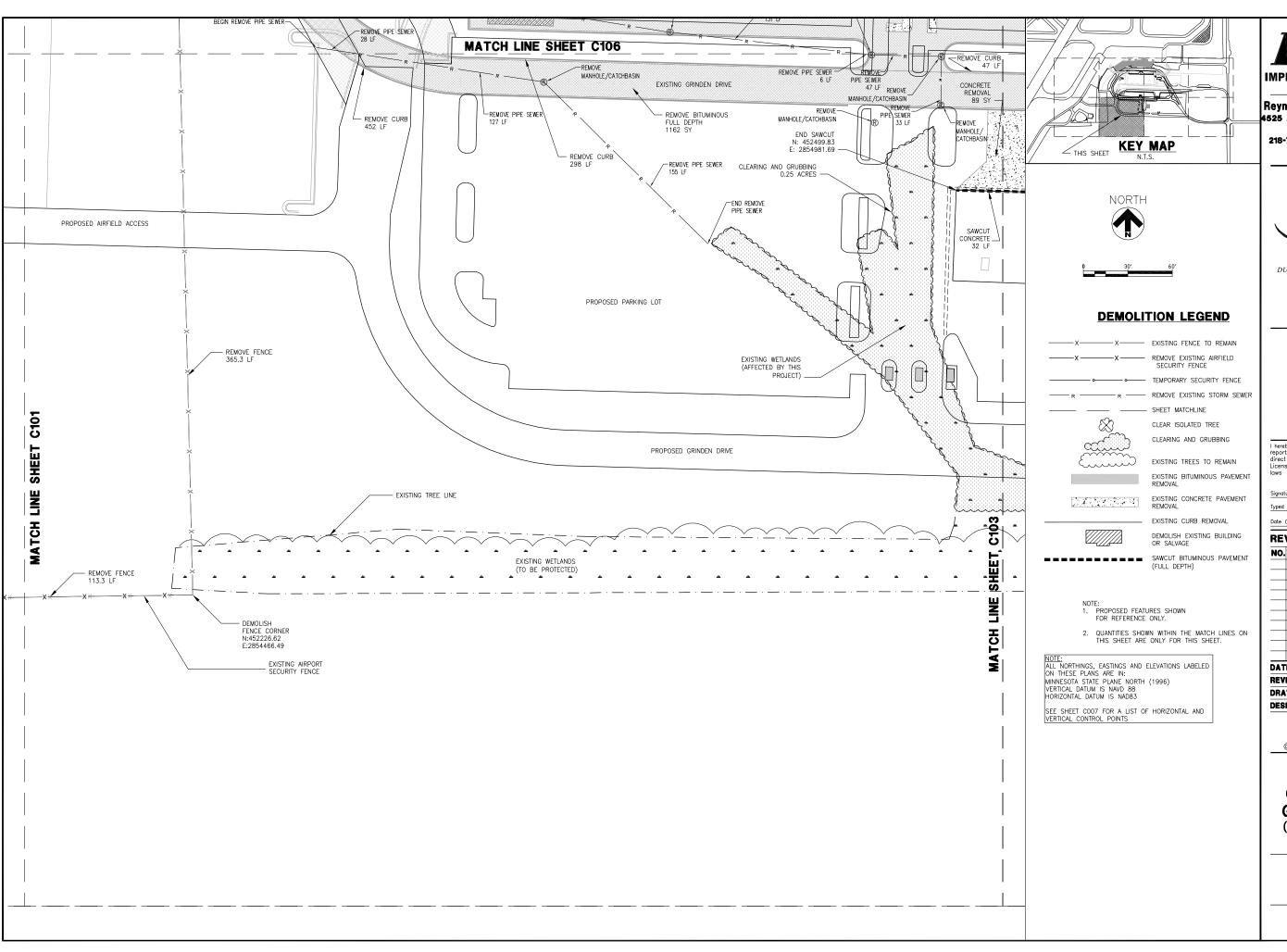
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SHEET TITLE

DEMOLITION, CLEARING AND GRUBBING PLAN (SHEET 1 OF 8)

SHEET NUMBER

C101



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REPLACEMENT **TERMINAL AREA** DEVELOPMENT, LANDSIDE SITE PHASE I

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Typed Name JOHN E. HIPPCHEN

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REVIEWED BY: BCT

DRAWN BY: DESIGNED BY: JEH

> **AEP PROJECT NUMBER** 214-1882-093 & 095

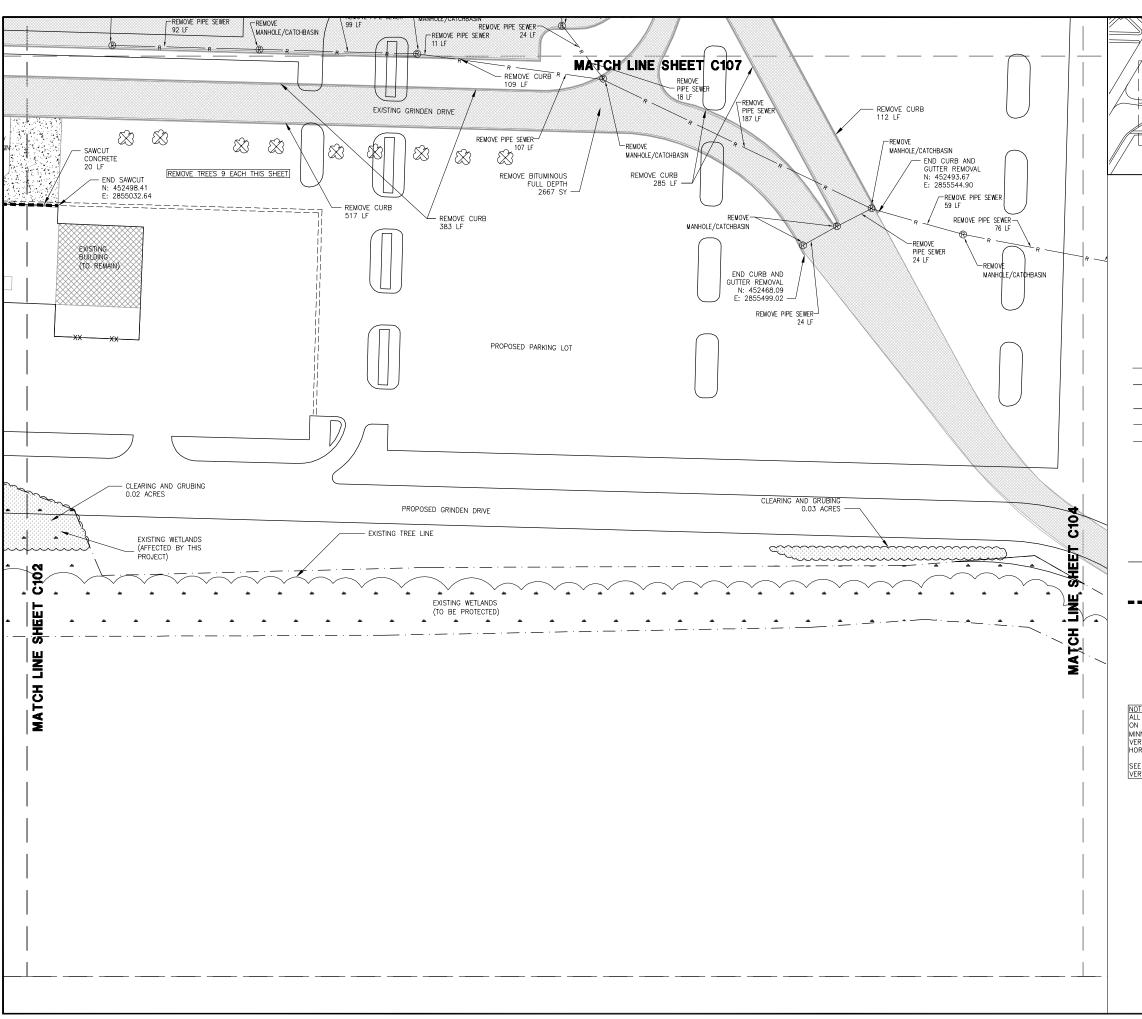
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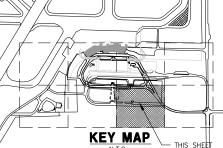
SHEET TITLE

DEMOLITION, **CLEARING AND GRUBBING PLAN** (SHEET 2 OF 8)

SHEET NUMBER

C102





NORTH

DEMOLITION LEGEND

-X- EXISTING FENCE TO REMAIN

REMOVE EXISTING AIRFIELD SECURITY FENCE

----- REMOVE EXISTING STORM SEWER

CLEAR ISOLATED TREE
CLEARING AND GRUBBING

EXISTING TREES TO REMAIN

EXISTING BITUMINOUS PAVEMENT

EXISTING CONCRETE PAVEMENT

EXISTING CURB REMOVAL

SHEET MATCHLINE

TEMPORARY SECURITY FENCE



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REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE

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PHASE I

Signature John E. HIPPCHEN

DEMOLISH EXISTING BUILDING OR SALVAGE

SAWCUT BITUMINOUS PAVEMENT (FULL DEPTH)

NOTE:

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PROPOSED FEATURES SHOWN
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2. QUANTITIES SHOWN WITHIN THE MATCH LINES ON THIS SHEET ARE ONLY FOR THIS SHEET.

REMOVAL

NOTE:
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MINNESOTA STATE PLANE NORTH (1996)
VERTICAL DATUM IS NAVD 88
HORIZONTAL DATUM IS NADB3

SEE SHEET COO7 FOR A LIST OF HORIZONTAL AND VERTICAL CONTROL POINTS

Date 05/07/2009 Reg. No. 22088
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REVIEWED BY: BCT
DRAWN BY: LAD

DESIGNED BY: JEH

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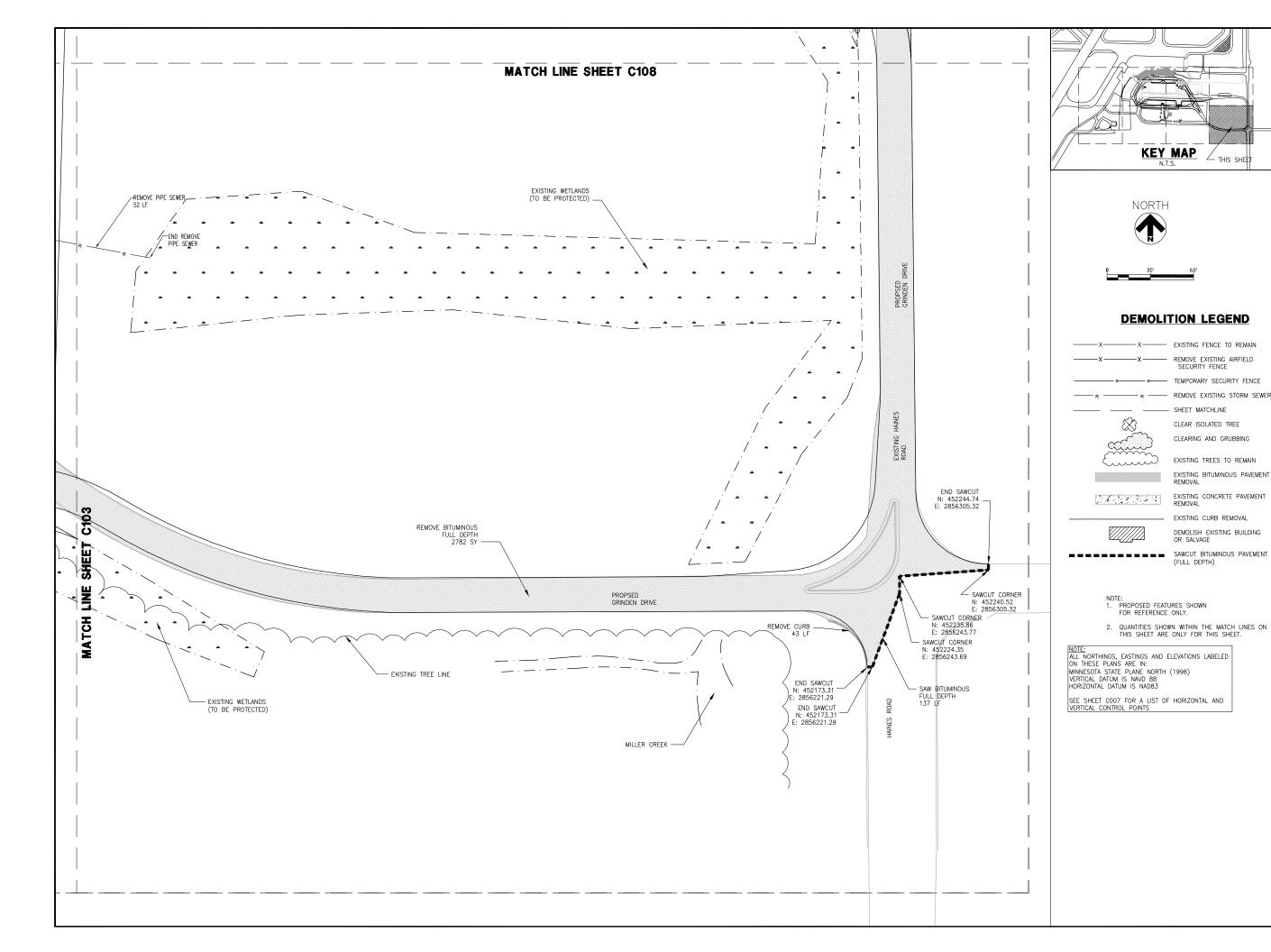
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SHEET TITLE

DEMOLITION, CLEARING AND GRUBBING PLAN (SHEET 3 OF 8)

SHEET NUMBER

C103





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Signature John E. HIPPCHEN

Date 05/07/2009 Reg. No. 220

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DESIGNED BY: JEH

AEP PROJECT NUMBER

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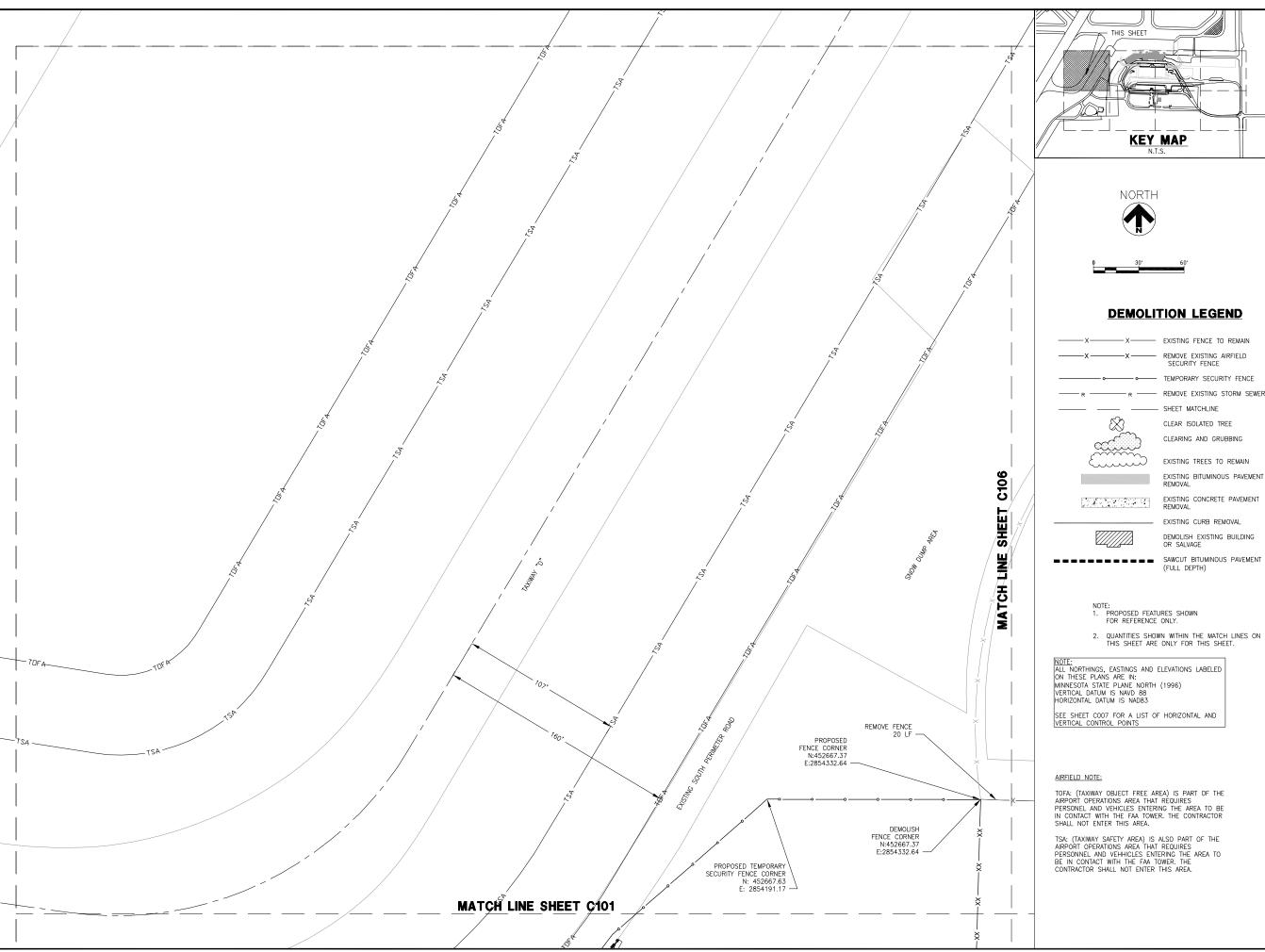
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SHEET TITLE

DEMOLITION, CLEARING AND GRUBBING PLAN (SHEET 4 OF 8)

SHEET NUMBER

C104





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Typed Name JOHN E. HIPPCHEN

EXISTING CURB REMOVAL DEMOLISH EXISTING BUILDING OR SALVAGE **REVISIONS**

SAWCUT BITUMINOUS PAVEMENT (FULL DEPTH)

PROPOSED FEATURES SHOWN
 FOR REFERENCE ONLY.

REMOVAL

SECURITY FENCE

SHEET MATCHLINE

CLEAR ISOLATED TREE CLEARING AND GRUBBING

EXISTING TREES TO REMAIN

EXISTING BITUMINOUS PAVEMENT EXISTING CONCRETE PAVEMENT

TEMPORARY SECURITY FENCE

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

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

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Date 05/07/2009 Reg. No. 22088

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REVIEWED BY: BCT

DRAWN BY: DESIGNED BY: JEH

AEP PROJECT NUMBER

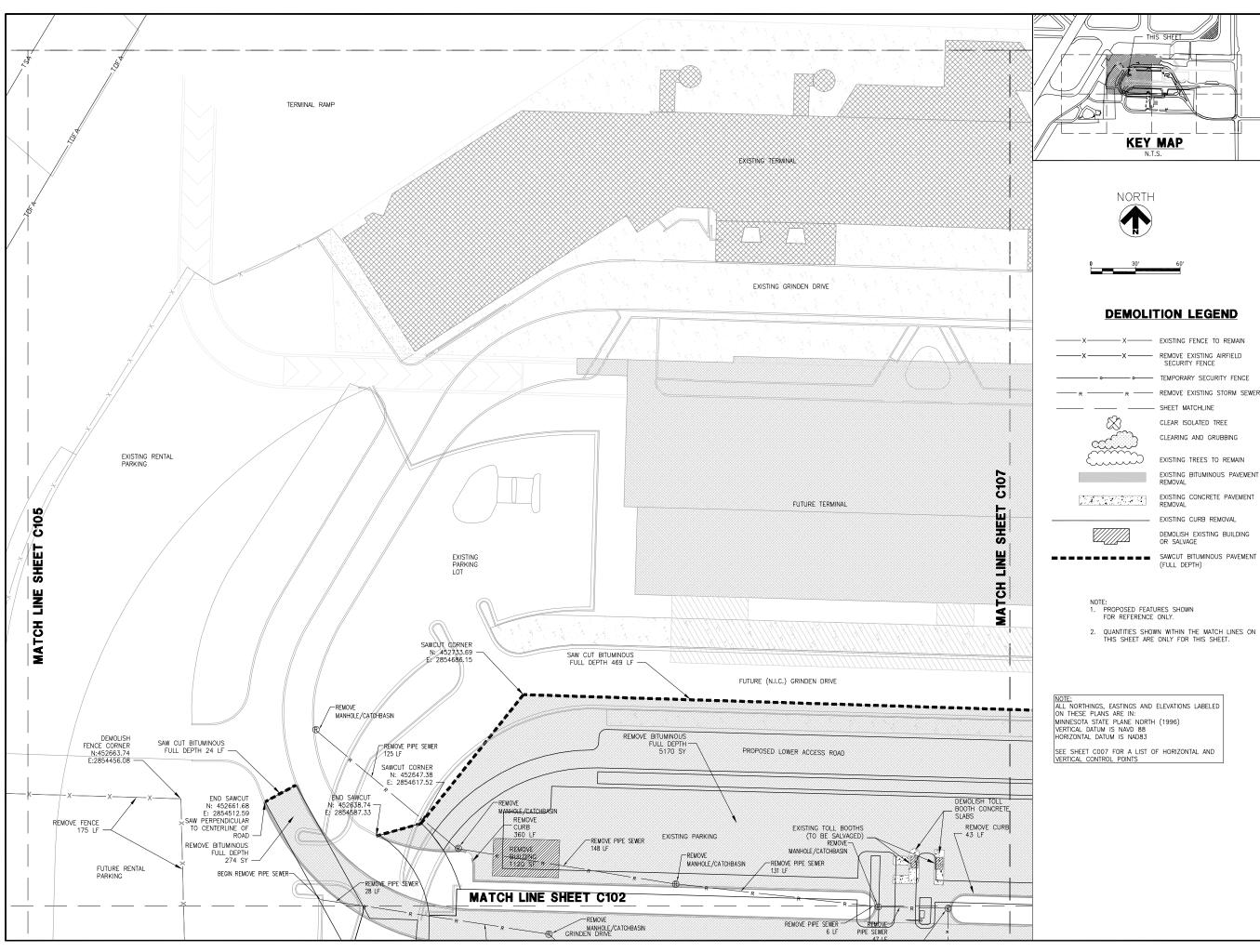
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SHEET TITLE

DEMOLITION, **CLEARING AND GRUBBING PLAN** (SHEET 5 OF 8)

SHEET NUMBER

C105





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Typed Name JOHN E. HIPPCHEN

DEMOLISH EXISTING BUILDING

SAWCUT BITUMINOUS PAVEMENT (FULL DEPTH)

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

Date 05/07/2009 Reg. No. 22088 **REVISIONS**

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DESIGNED BY: JEH

AEP PROJECT NUMBER

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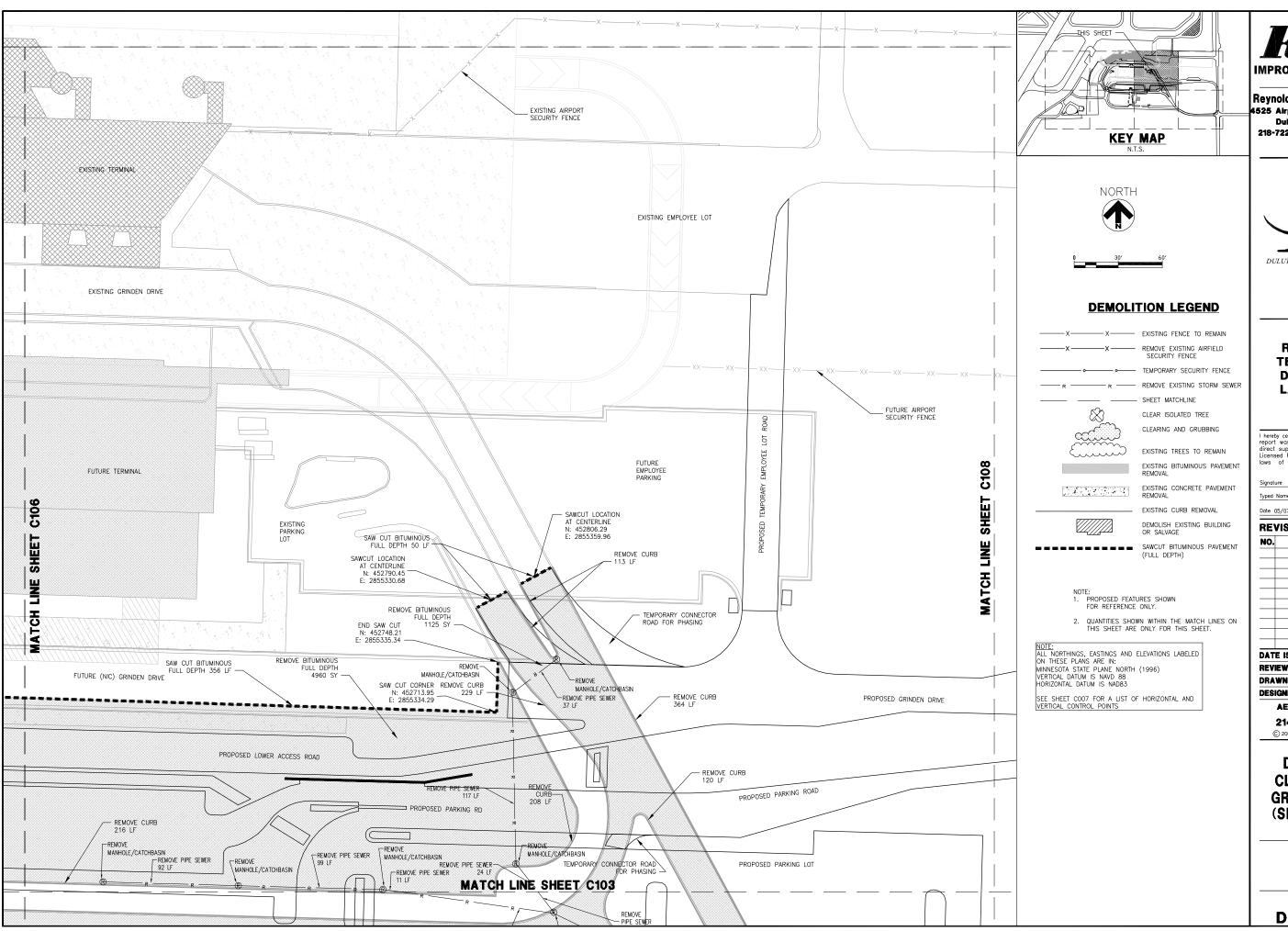
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SHEET TITLE

DEMOLITION, **CLEARING AND GRUBBING PLAN** (SHEET 6 OF 8)

SHEET NUMBER

C106



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Signature John L. Hipphen
Typed Name JOHN E. HIPPCHEN

REVISIONS
NO. DESCRIPTION DATE

 E ISSUED:	05-11-200	

DATE ISSUED: 05-11-2009
REVIEWED BY: BCT

DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER

214-1882-093 & 095

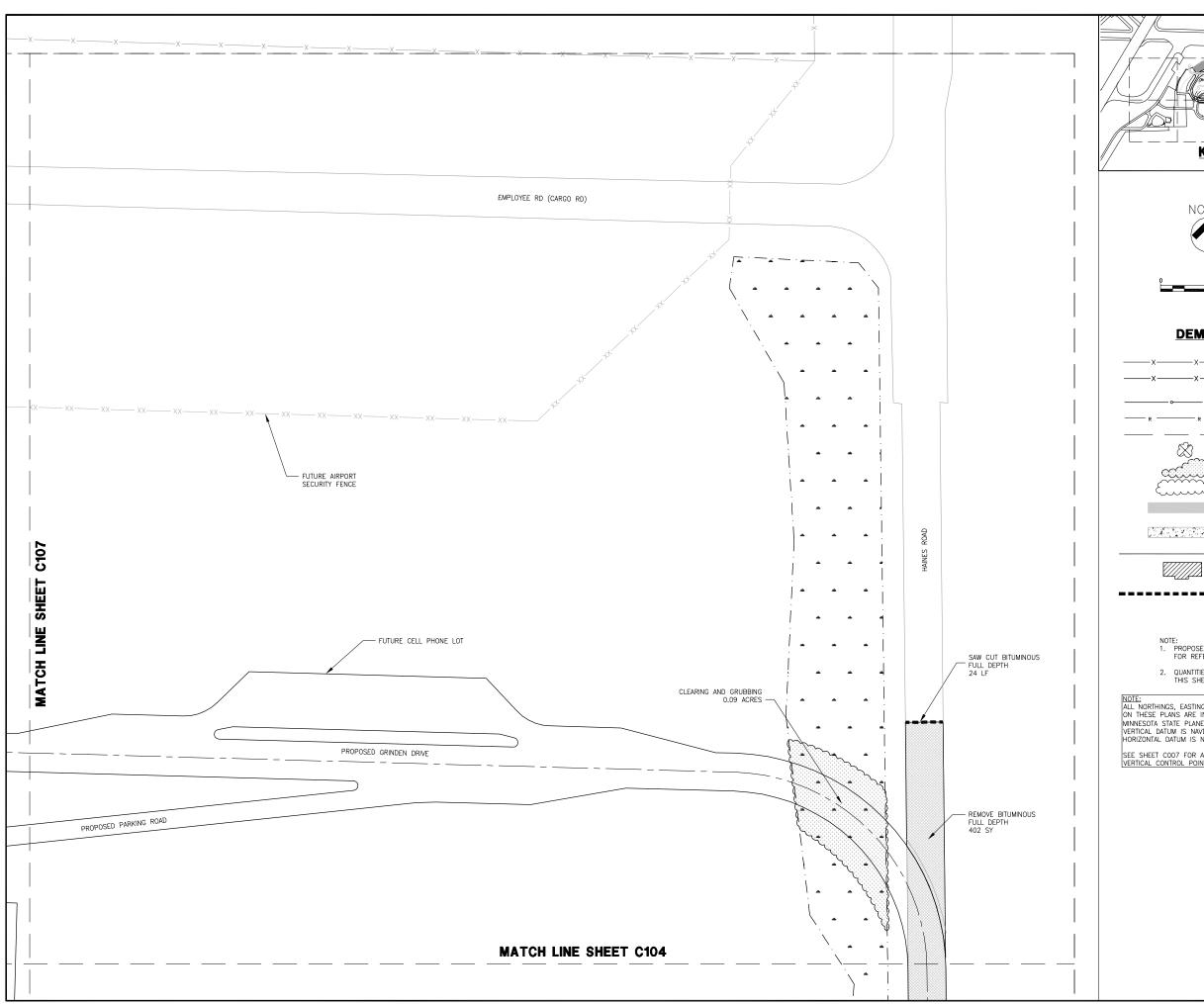
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SHEET TITLE

DEMOLITION, CLEARING AND GRUBBING PLAN (SHEET 7 OF 8)

SHEET NUMBER

C107





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Typed Name JOHN E. HIPPCHEN

EXISTING CURB REMOVAL DEMOLISH EXISTING BUILDING OR SALVAGE

SAWCUT BITUMINOUS PAVEMENT

(FULL DEPTH)

PROPOSED FEATURES SHOWN
 FOR REFERENCE ONLY.

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

REMOVAL

KEY MAP

DEMOLITION LEGEND

-X- EXISTING FENCE TO REMAIN

REMOVE EXISTING AIRFIELD SECURITY FENCE

R --- REMOVE EXISTING STORM SEWER

CLEAR ISOLATED TREE CLEARING AND GRUBBING

EXISTING TREES TO REMAIN EXISTING BITUMINOUS PAVEMENT EXISTING CONCRETE PAVEMENT

SHEET MATCHLINE

TEMPORARY SECURITY FENCE

NORTH

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

SEE SHEET COO7 FOR A LIST OF HORIZONTAL AND

REVISIONS

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SHEET TITLE

DEMOLITION, **CLEARING AND GRUBBING PLAN** (SHEET 8 OF 8)

SHEET NUMBER

C108



GARAGE BUILDING TO BE DEMOLISHED (NORTH)



GARAGE BUILDING TO BE DEMOLISHED (SOUTH)



GARAGE BUILDING TO BE DEMOLISHED (WEST SIDE)



TOLL BOOTHS TO BE SALVAGED/RELOCATED & ACCESS, GATE EQUIPMENT

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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REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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Signature John E. HippChEN

Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

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NO.	DESCRIPTION	DATE

DATE ISSUED: 05-11-2009

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DESIGNED BY: JEH

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SHEET TITLE

DEMOLITION
DETAILS
AND PHOTOS

SHEET NUMBER

C109

CURVE	CENTER	PC	PT	RADIUS	DELTA	LENGTH	ALIGNMENT NAME
NUMBER							
1	N:452587.8783	N:452589.1811	N:452712.8318	125.0	87" 50' 24"	191.64	GRINDEN DRIVE
	E:2856114.8979	E:2856239.8908	E:2856118.3070				
2	N:452600.0092	N:45266.9720	N:452699.4515	100.0	7' 37' 00"	13.29	PARKING ACCESS ROAD
	E:2855926.9442	E:2855929.6717	E:2855916.3980				
3	N:452611.8981	N:452711.8609	N:45271035131	100.0	11" 06" 36"	19.39'	LOWER ACCESS ROAD
	E:2855491.2142	E:2855493.9416	E:2855474.6284				
4	N:452952.8466	N:452654.5196	N:452652.9582	300.0	7' 37' 00"	39.88	PARKING ACCESS ROAD
	E:2855461.0891	E:2855492.7278	E:2855452.90061				
5	N:452952.8466	N:452677.9917	N:452676.3069	125.0'	11" 06' 35"	24.24	LOWER ACCESS ROAD
	E:2855461.0891	E:2855281.2642	E:2855257.1230				
6	N:452619.6561	N:452659.6413	N:452649.1680	40.0'	44" 01' 08"	30.73	PARKING ACCESS ROAD
	E:2855206.8806	E:2855207.9716	E:2855179.8797				
7	N:452565.5641	N:452690.5133	N:452566.9034	125.0'	90° 57' 31"	198.43	LOWER ACCESS ROAD
	E:2854733.0263	E:2854736.4564	E:2854608.0372				
8	N:452615.7601	N:452750.7099	N:452619.3704	135.0	90' 01' 50"	212.13	GRINDEN DRIVE
	E:2854726.3861	E:2854730.0682	E:2854591.4344		1		
9	N:452605.0701	N:452480.1149	N:452507.6858	125.0	37' 17' 22"	81.35	AIRPORT ACCESS ROAD
	E:2854198.1442	E:2854194.7968	E:2854119.7778				
10	N:452460.8155	N:452464.4258	N:452325.8658	135.0'	89* 58' 10"	211.99'	GRINDEN DRIVE
	E:2854722.2410	E:2854587.2893	E:2854718.5589		1		
11*	N:452151.1829	N:452301.1271	N:452279.6581	150.0	29" 30" 40"	77.26'	GRINDEN DRIVE
	E:2855621.1442	E:2855625.2354	E:2855698.5659				
12 **	N:452617.9781	N:452279.6581	N:452222.9820	395.0	30* 45' 03"	212.00'	GRINDEN DRIVE
	E:2855902,4444	E:2855698.5659	E:2855900.2168	2.00			

TEMPORARY ROAD CONNECTIONS HORIZONTAL CURVE DATA TABLE ALIGNMENT NAME N:452879.4958 N:452730.3601 N:452804.6463 E:2855491.9817 E:2855475.8919 E:2855361.9893 N:452832.3931 N:452732.9287 N:452782.4180 EMPORARY ROAD CONNECTION TEMPORARY ROAD 115.0' 34' 06' 52" 68.47 N:402602.3931 N:402702.9267 N:402702.4160 E:2855439.4738 E:2855381,7514 E:2855335.9000 N:452576.2839 N:452643.3980 N:452585.2296 E:2854548.6294 E:2854603.9918 E:2854635.1700 CONNECTION TEMPORARY PARKING 87.0' 67.69 44' 34' 45" CONNECTION

NOTES:
1. THE TEMPORARY ROAD CONNECTIONS SHALL BE PLACED FOR EXISTING TERMINAL TRAFFIC AND SHALL BE PHASED. SEE SHEETS C012—C015 FOR TRAFFIC CONTROL AND PHASING.



NOTES:
1. *PT THIS CURVE IS PRC CURVE #11 2. ** PC THIS CURVE IS PRC CURVE #12 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 COO7 FOR CONTROL POINT INFORMATION TERMINAL APRON - FIELD ACCESS ⊕_{CP-54} ⊕_{CP-68} - EXISTING AIRPORT SECURITY FENCE **EXISTING TERMINAL** EXISTING EMPLOYEE LOT EMPLOYEE RD (CARGO RD.) GRINDEN DRIVE EXISTING AIRPORT SECURITY FENCE **CURVE 14** FUTURE TERMINAL NIC CURVE 13 **CURVE 8 CURVE 2** CURVE 7 FUTURE (N.I.C.) GRINDEN DRIVE PROPOSED LOWER ACCESS ROAD **CURVE 15** PARKING LOT CURVE 1 CURVE 4 CURVE 5 MILLER CREEK WATERSHED RENTAL PARKING CURVE 9 PROPOSED PARKING LOT **CURVE 6** $\oplus_{\mathrm{CP-69}}$ PROPOSED PARKING LOT CURVE 10 - EXISTING RETENTION PONDS **CURVE 11** PROPOSED GRINDEN DRIVE CURVE 12 AIRPORT ROAD - FXISTING AIRPORT - EXISTING WETLAND - MILLER CREEK WATERSHED

REPLACEMENT **TERMINAL AREA** DEVELOPMENT, LANDSIDE SITE PHASE I

DULUTH INTERNATIONAL AIRPORT

Reynolds, Smith and Hills, Inc.

4525 Airport Approach Road, Ste / Duluth, Minnesota 55811 218-722-1227 FAX 218-722-1052 www.rsandh.com

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Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

REVISIONS

NO. DESCRIPTION DATE

DATE ISSUED: 05-11-2009 REVIEWED BY: BCT DRAWN BY: DESIGNED BY: JEH

> **AEP PROJECT NUMBER** 214-1882-093 & 095

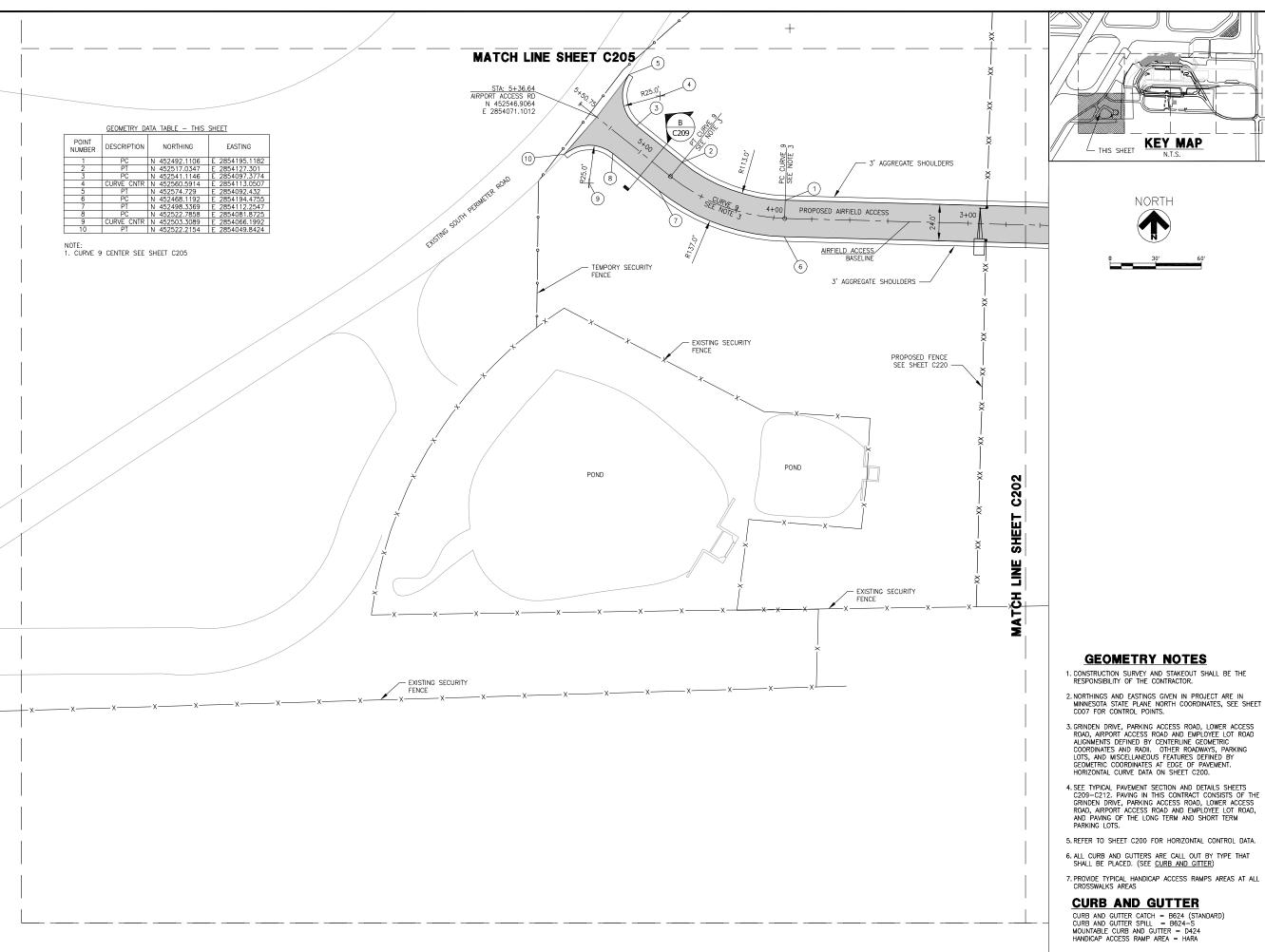
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SHEET TITLE

HORIZONTAL GEOMETRY DATA

SHEET NUMBER

C200





GEOMETRY NOTES



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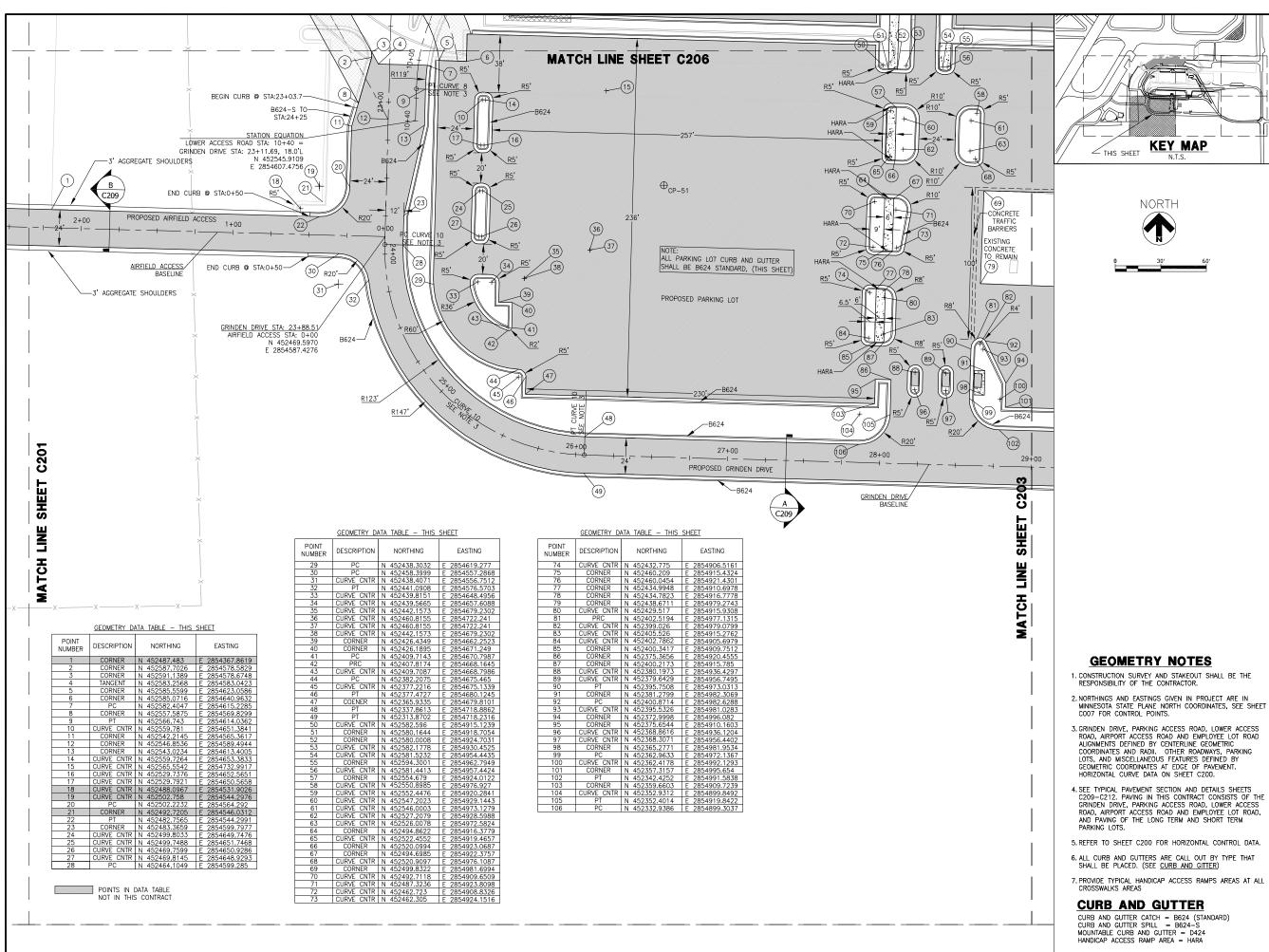
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SHEET TITLE

GEOMETRY PLAN (SHEET 1 OF 8)

SHEET NUMBER

C201





NORTH



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DATE ISSUED: 05-11-2009 REVIEWED BY: BCT

DRAWN BY: DESIGNED BY: JEH

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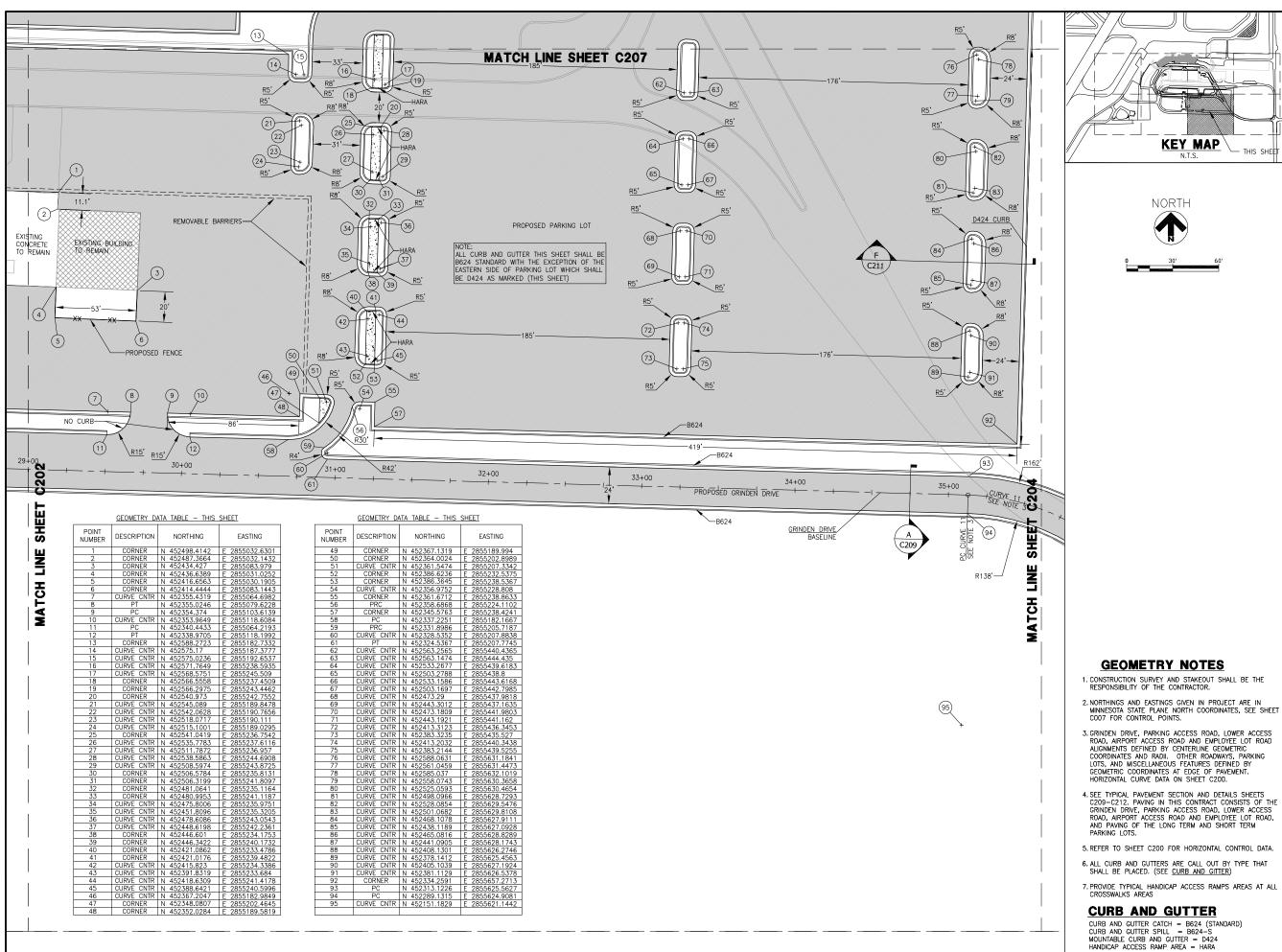
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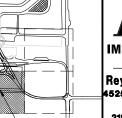
GEOMETRY PLAN (SHEET 2 OF 8)

SHEET NUMBER

C202







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GEOMETRY NOTES



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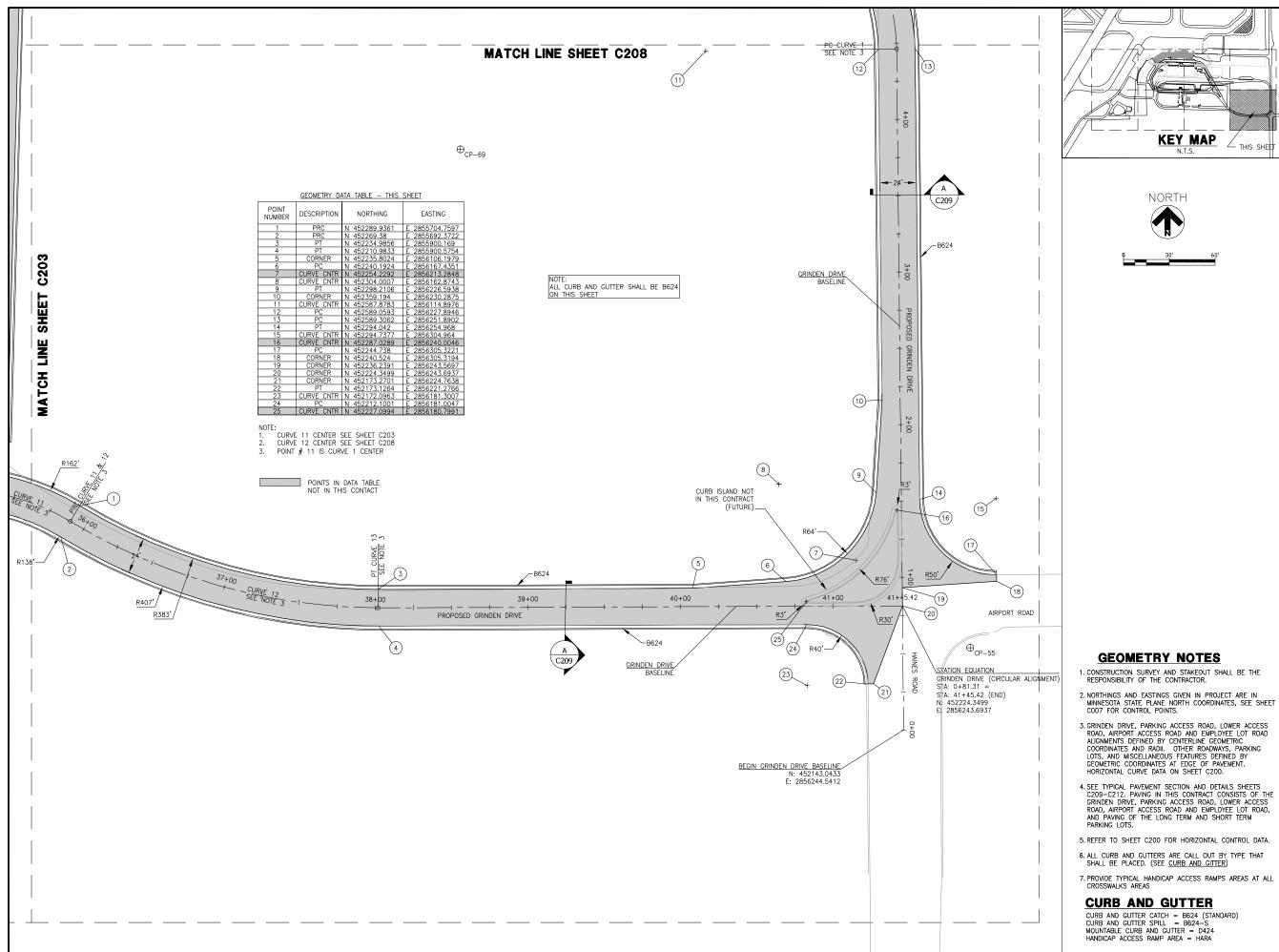
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SHEET TITLE

GEOMETRY PLAN (SHEET 1 OF 8)

SHEET NUMBER

C203





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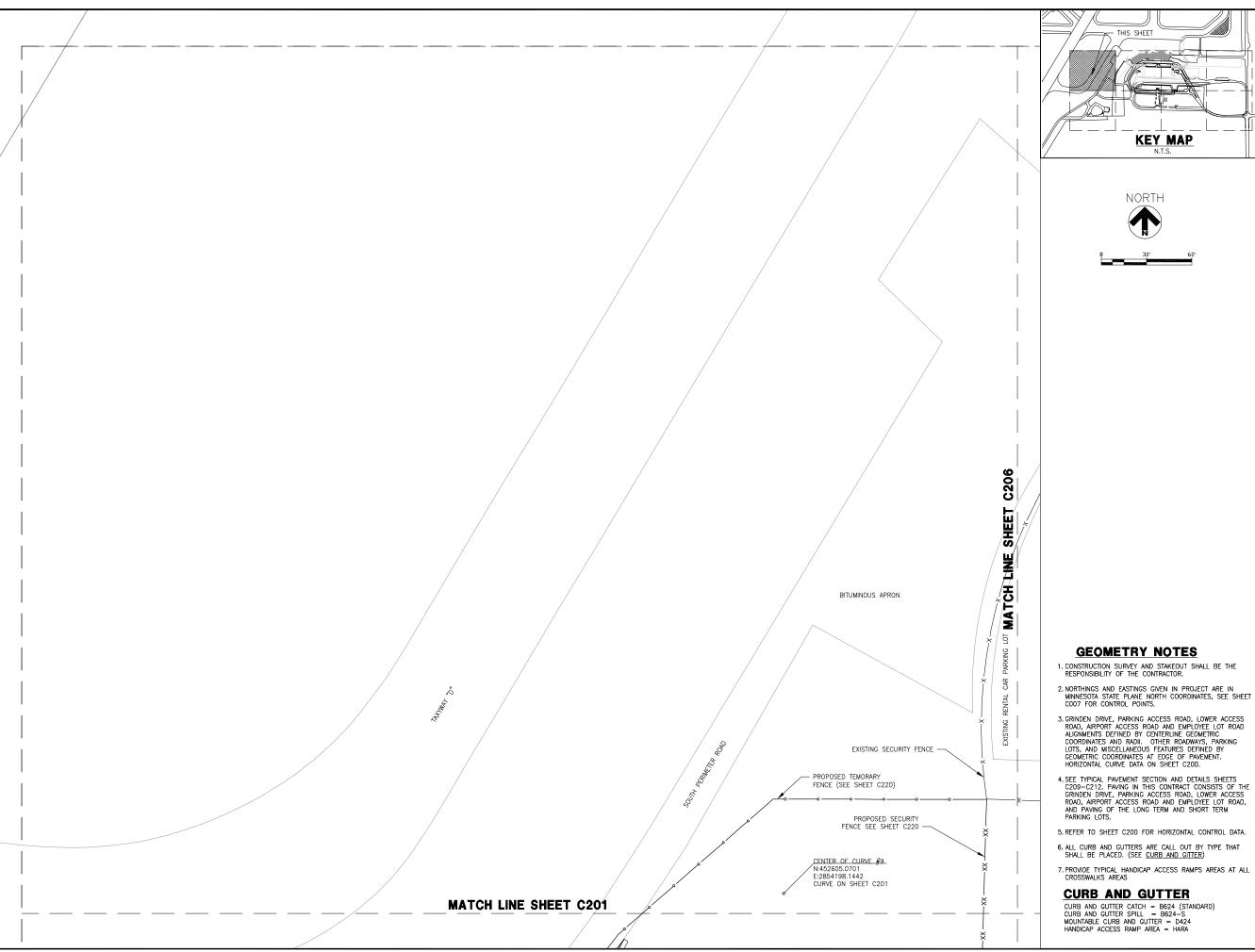
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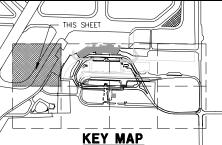
SHEET TITLE

GEOMETRY PLAN (SHEET 4 OF 8)

SHEET NUMBER

C204





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> **AEP PROJECT NUMBER** 214-1882-093 & 095

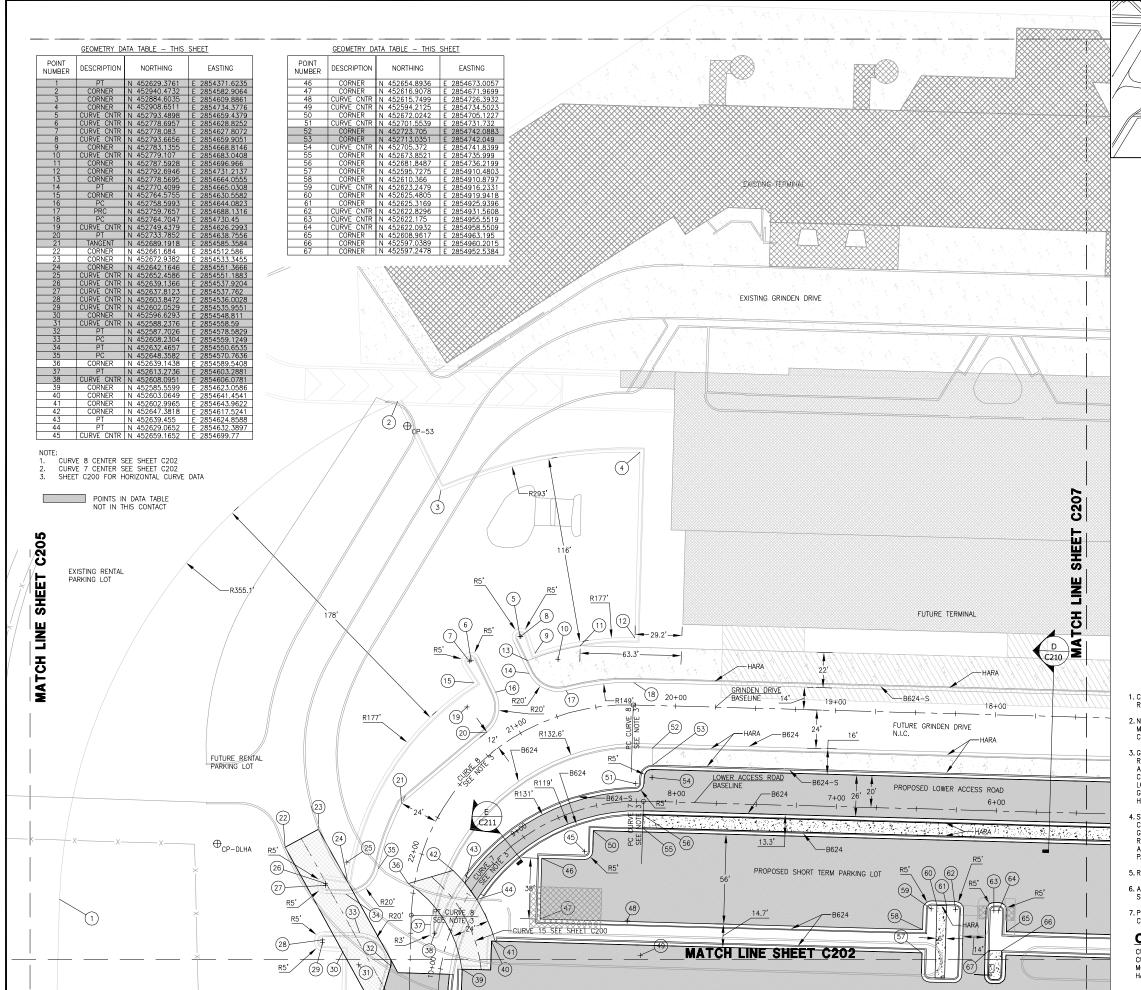
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SHEET TITLE

GEOMETRY PLAN (SHEET 5 OF 8)

SHEET NUMBER

C205





NORTH



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Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

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DESIGNED BY: JEH

AEP PROJECT NUMBER

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SHEET TITLE

GEOMETRY
PLAN
(SHEET 6 OF 8)

SHEET NUMBER

C206

BID DOCUMENTS

GEOMETRY NOTES

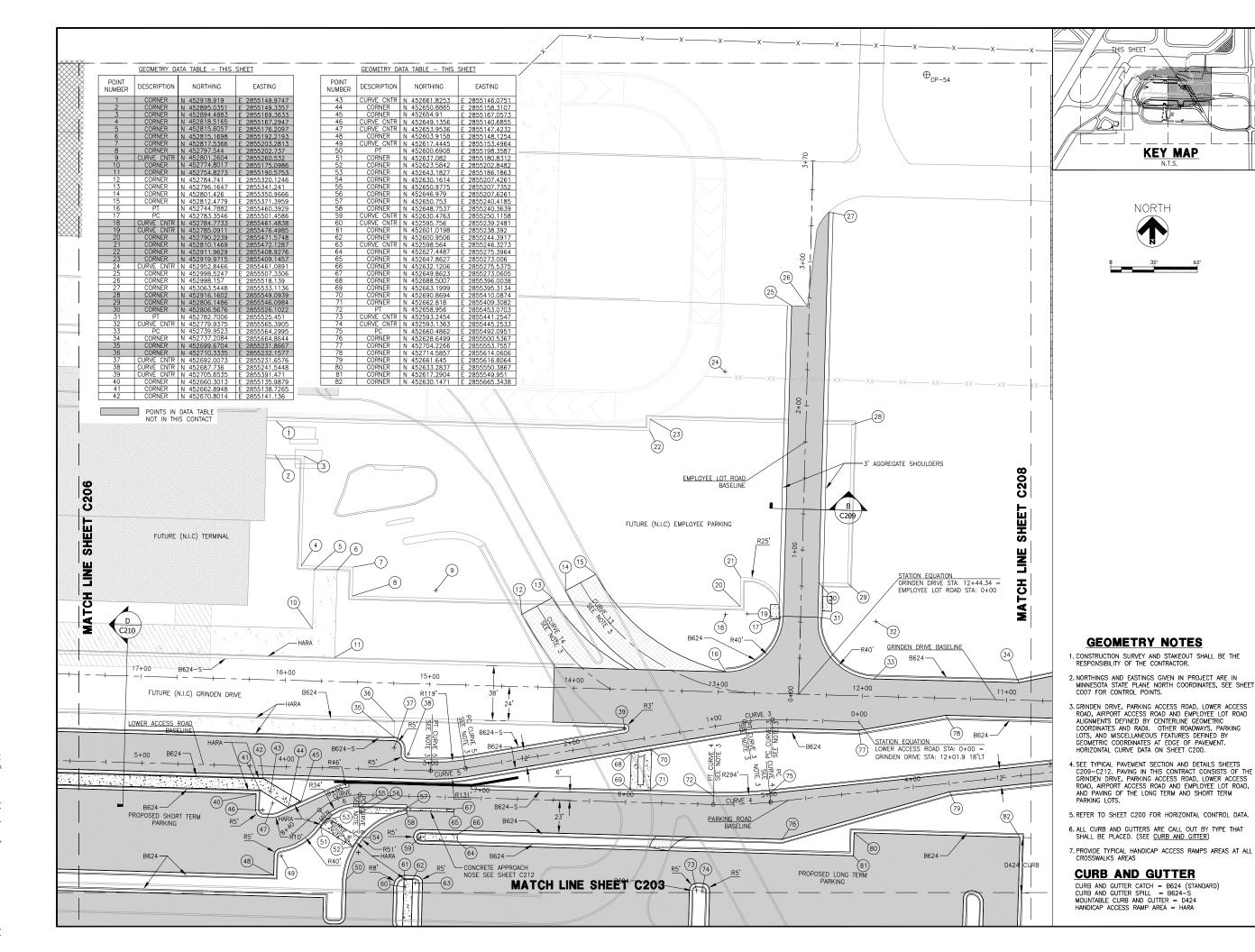
1. CONSTRUCTION SURVEY AND STAKEOUT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

- 2. NORTHINGS AND EASTINGS GIVEN IN PROJECT ARE IN MINNESOTA STATE PLANE NORTH COORDINATES, SEE SHEET COO7 FOR CONTROL POINTS.
- 3. GRINDEN DRIVE, PARKING ACCESS ROAD, LOWER ACCESS ROAD, AIRPORT ACCESS ROAD AND EMPLOYEE LOT ROAD ALIGNMENTS DEFINED BY CENTERLING ECOMETRIC COORDINATES AND RADII. OTHER ROADWAYS, PARKING LOTS, AND MISCELLANEOUS FEATURES DEFINED BY GEOMETRIC COORDINATES AT EDGE OF PAVEMENT. HORIZONTAL CURVE DATA ON SHEET C200.
- HORIZONTAL CURVE DATA ON SHEET C200.

 4. SEE TYPICAL PAVEMENT SECTION AND DETAILS SHEETS C209-C212. PAVING IN THIS CONTRACT CONSISTS OF THE GRINDEN DRIVE, PARKING ACCESS ROAD, LOWER ACCESS ROAD, AIRPORT ACCESS ROAD AND EMPLOYEE LOT ROAD, AND PAVING OF THE LONG TERM AND SHORT TERM 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 <u>CURB AND GITTER</u>)
- 7. PROVIDE TYPICAL HANDICAP ACCESS RAMPS AREAS AT ALL CROSSWALKS AREAS

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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> AEP PROJECT NUMBER 214-1882-093 & 095

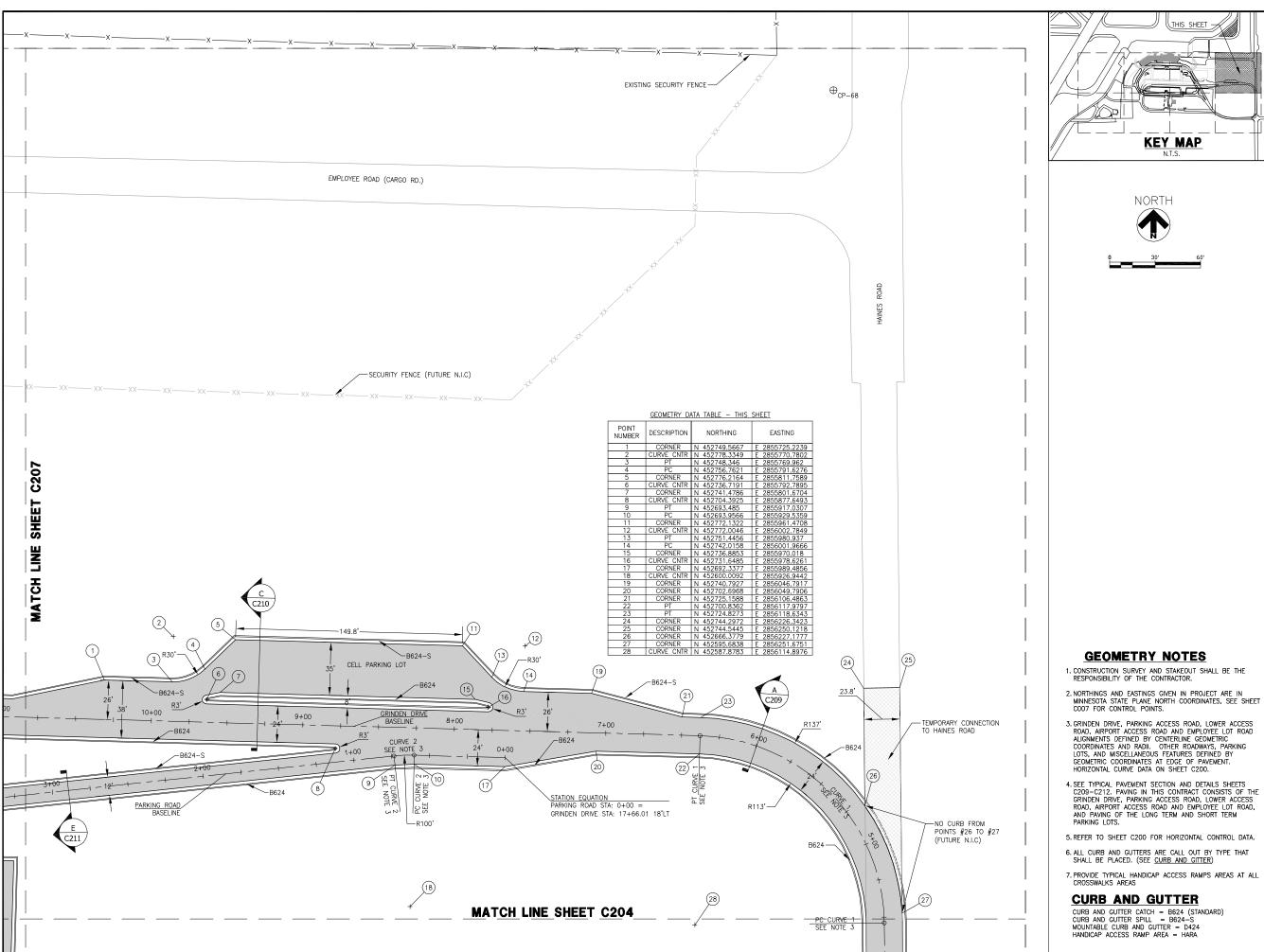
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SHEET TITLE

GEOMETRY
PLAN
(SHEET 7 OF 8)

SHEET NUMBER

C207





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DATE ISSUED: 05-11-2009 REVIEWED BY: BCT

DRAWN BY: DESIGNED BY: JEH

AEP PROJECT NUMBER

214-1882-093 & 095

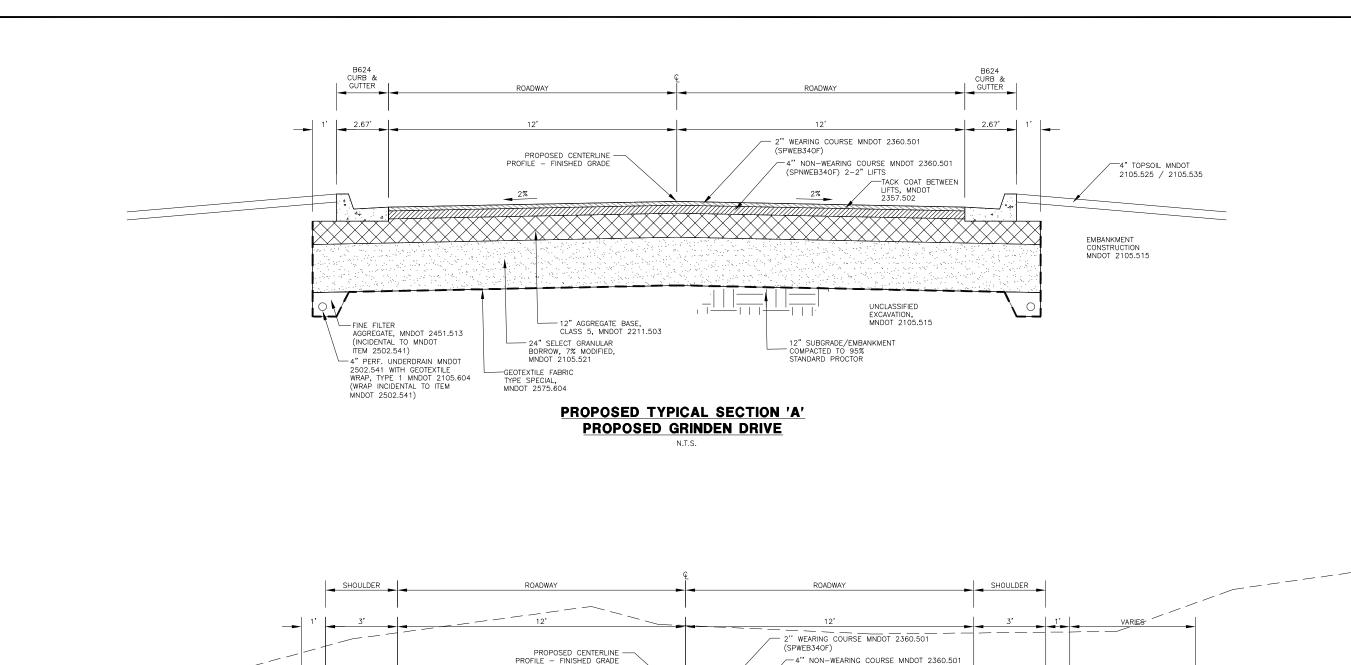
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SHEET TITLE

GEOMETRY PLAN (SHEET 8 OF 8)

SHEET NUMBER

C208



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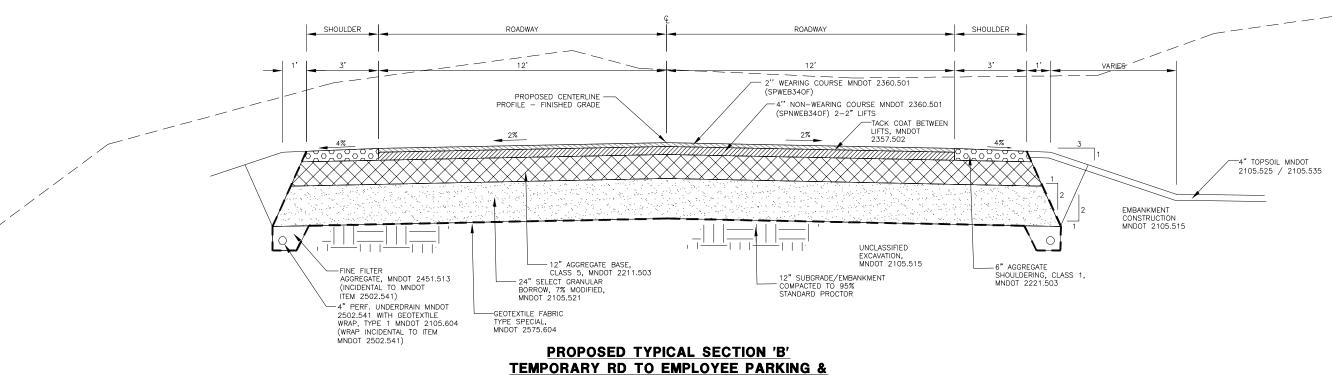
SHEET TITLE

TYPICAL
PAVEMENT
SECTIONS
(SHEET 1 OF 3)

SHEET NUMBER

C209

BID DOCUMENTS



AIRPORT ACCESS RD



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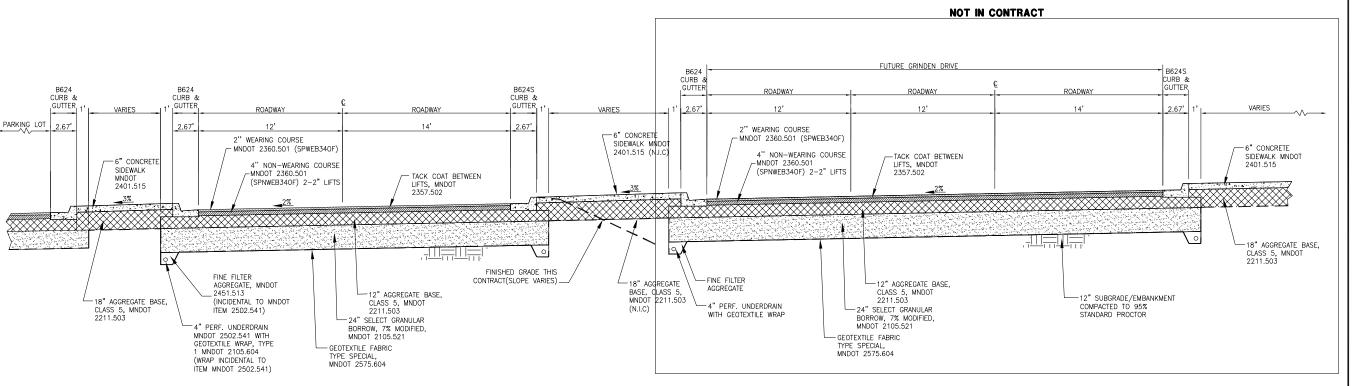
SHEET TITLE

TYPICAL
PAVEMENT
SECTIONS
(SHEET 2 OF 3)

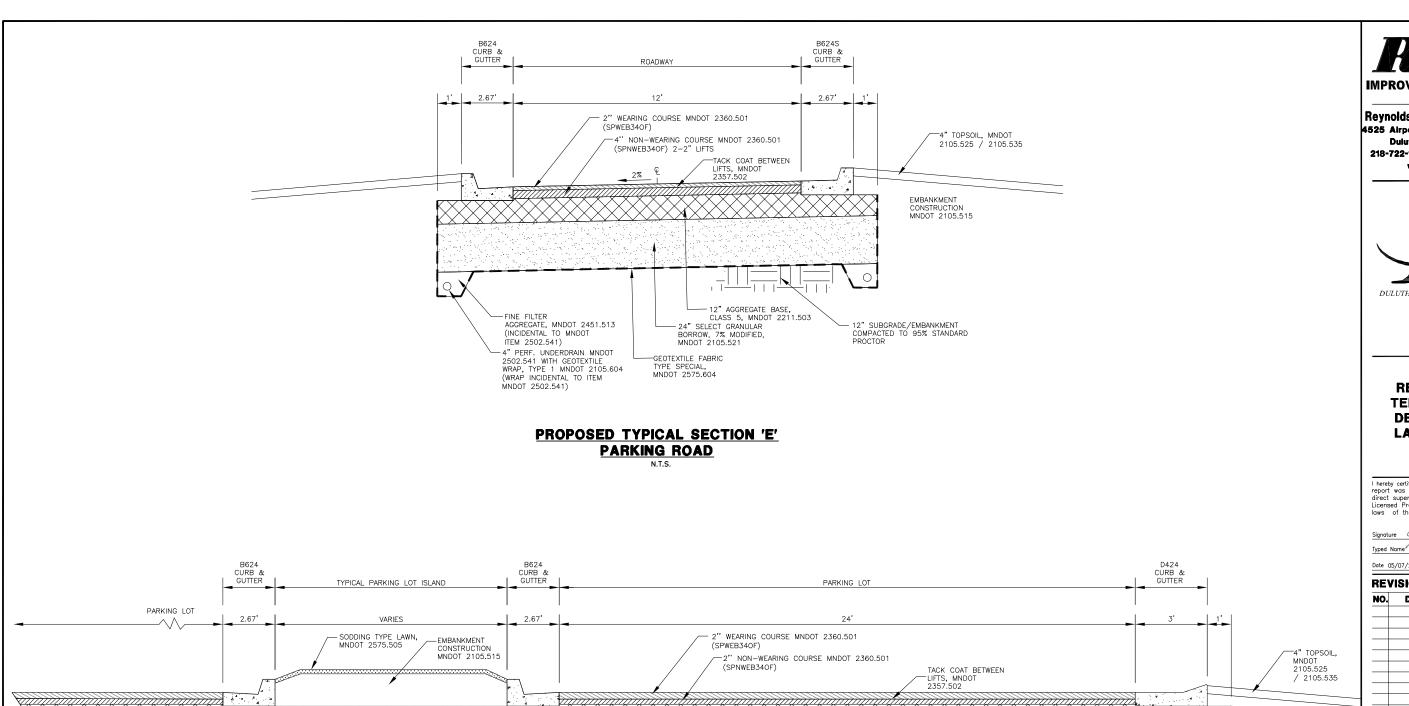
SHEET NUMBER

C210

BID DOCUMENTS



PROPOSED TYPICAL SECTION 'D'
LOWER ACCESS ROAD &
FUTURE GRINDEN DRIVE



FMBANKMENT CONSTRUCTION MNDOT 2105.515 FINE FILTER
AGGREGATE, MNDOT 2451.513
(INCIDENTAL TO MNDOT— - 12" AGGREGATE BASE, CLASS 5, MNDOT 2211.503 ITEM 2502.541) -18" SELECT GRANULAR BORROW, 7% MODIFIED, MNDOT 2105.521 — 12" SUBGRADE/EMBANKMENT COMPACTED TO 95% STANDARD PROCTOR 4" PERF. UNDERDRAIN MNDOT— 2502.541 WITH GEOTEXTILE WRAP, TYPE 1 MNDOT 2105.604 -GEOTEXTILE FABRIC (WRAP INCIDENTAL TO ITEM MNDOT 2502.541) TYPE SPECIAL, MNDOT 2575.604

PROPOSED TYPICAL SECTION 'F' **PARKING LOT**

N.T.S.

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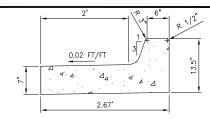
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SHEET TITLE

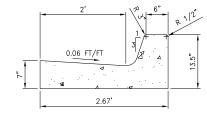
TYPICAL PAVEMENT SECTIONS (SHEET 3 OF 3)

SHEET NUMBER

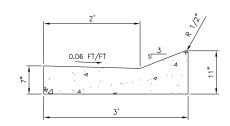
C211



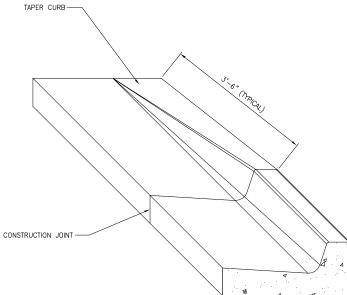
DESIGN B624 - SPILL: CURB AND GUTTER DETAIL



DESIGN B624 - NORMAL: CURB AND GUTTER DETAIL



DESIGN D424 - NORMAL: CURB AND GUTTER DETAIL

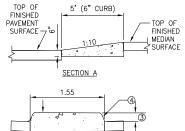


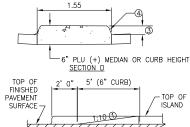
DETAIL OF CURB AND GUTTER TERMINATION

N.T.S.

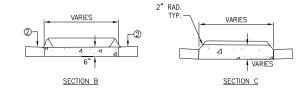
NOTES:

- 1. SEE PLAN SHEETS FOR LOCATIONS OF EACH TYPE OF CURB AND GUTTER.





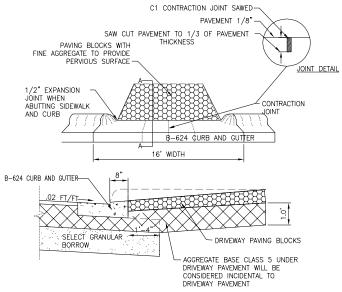
SECTION E



NOTES:

- ① TYPICAL SLOPE ALONG GUTTER LINE EACH DIRECTION.
- ② BITUMINOUS PAVEMENT ALONG APPROACH
- (3) VARIABLE MEDIAN OR CURB HEIGHT.
- 4 SHAPE SAME AS MEDIAN OR CURB.
- ⑤ PROVIDE ONE 6" x 6" OPENING IN MEDIAN FOR SIGNING IF REQUIRED.
- 6 PAID FOR AS CONCRETE WALK, INCLUDES GUTTER, IF REQUIRED.

CONCRETE APPROACH NOSE DETAIL



SECTION A-A

NOTE: THE CREST OF THE DRIVEWAY MUST BE AT LEAST 6" ABOVE GUTTER TO CONTAIN RUNOFF, NOTE: STATE OF MIN. STANDARD PLATE 7035L NOTE 5 SHALL NOT APPLY.

DRIVEWAY ENTRANCE

10' MAX SPACING BETWEEN CONTRACTION JOINTS 0.5" EXPANSION JOINT MATERIAL AT EACH END OF ALL CURB RETURNS AND AT 150 FEET MAX. SPACING-BACK OF CURB-FLOW LINE -> **CURB AND GUTTER LAYOUT DETAIL**



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DESIGNED BY: JEH

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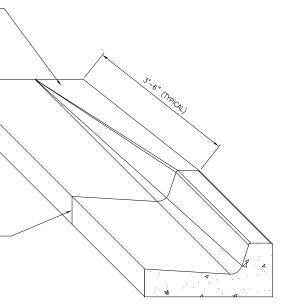
TYPICAL CURB AND

GUTTER DETAILS (SHEET 1 OF 2)

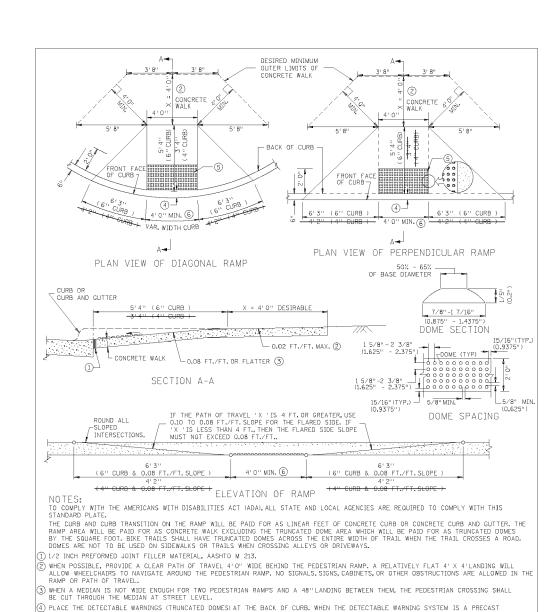
SHEET NUMBER

C212

BID **DOCUMENTS**



2. FORMS MAY BE TILTED TO ACHIEVE THE SPECIFIED SLOPE.



1) PLACE INE DETECTABLE WARNINGS (TRUNCATED DOMES) AT THE BACK OF CURB. WHEN THE DETECTABLE WARNING SYSTEM IS A PRECAST MATERIAL, THE CURB SHALL BE HAND FORMED TO FILL THE GAP.

5) ADA REQUIRED TRUNCATED DOME AREA SHALL BE 2'0" MIN.IN DIRECTION OF TRAVEL AND SHALL EXTEND THE FULL WIDTH (3'0" OR 4'0" TYP.) OF THE CURB RAMP. THIS 2'0" BY 3'0" OR 4'0" WIDTH (TYP.) TRUNCATED DOME AREA SHALL CONTRAST VISUALLY WITH THE ADJACENT WALK-ING SUPFACE. THE ENTIRE TRUNCATED DOME AREA SHALL BE A LIGHT (GRAY OR BUFF TYPICALLY) COLOR WHEN THE ADJACENT SIDEWALK IS A DARK COLOR. THE ENTIRE TRUNCATED DOME AREA SHALL BE A DARK COLOR (RED OR DARK GRAY TYPICALLY) WHEN THE ADJACENT SIDEWALK IS

A LIGHT GRAY CEMENT CUCLUR.
4 '0' MIN. FOR NEW CONSTRUCTION. 3'0" ALLOWED TO STAY IN PLACE FOR RETROFIT PROJECTS. IN SITUATIONS WHERE THE CURB CUT WIDTH EXCEEDS 4'0", THE DETECTABLE WARNINGS SHALL EXTEND THE FULL WIDTH.

STATE OF MINNESOTA

DEPARTMENT OF TRANSPORTATION

PEDESTRIAN CURB RAMP

FOR THE HANDICAPPED

PPROVED FEB. 20, 2004

Maky

STATE DESIGN ENGINEER

SPECIFICATION

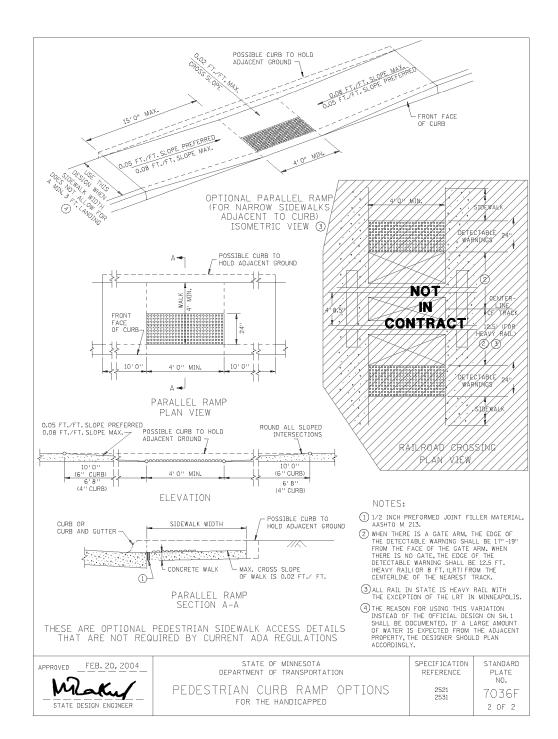
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REVISION DATE 4-14-2004 STANDARD

PLATE NO.

7036F

1 OF 2





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Signat	ure C	100	m	2 Hpgh
Typed	Name /	JOHN	E.	HIPPCHEN

Date 05/07/2009 Reg. No. 22088

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DRAWN BY: RDRE
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214-1882-093 & 095

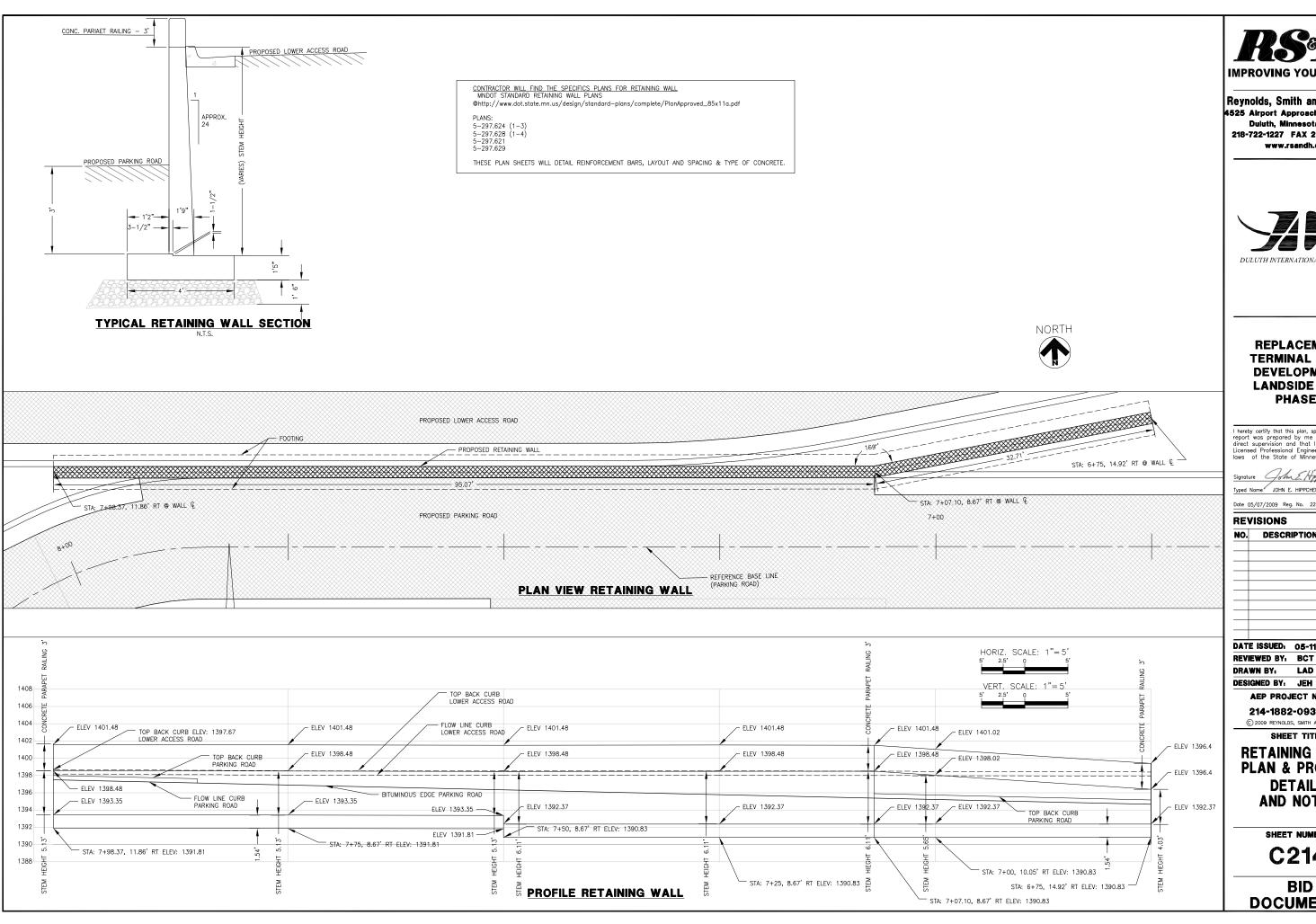
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SHEET TITLE

TYPICAL
CURB AND
GUTTER
DETAILS
(SHEET 2 OF 2)

SHEET NUMBER

C213



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SHEET TITLE

RETAINING WALL PLAN & PROFILE, **DETAILS AND NOTES**

SHEET NUMBER

C214

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
- 3. ALL EXISTING AIRPORT SIGNAGE ON ANY FENCING DEMOLITION WILL BE SALVAGED AND TURNED OVER TO THE OWNER.
- 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 COO3,

GENERAL NOTES

- DIMENSIONS, SIZES, GAUGES, WEIGHTS, OR THICKNESSES SHOWN ARE THE MINIMUM ACCEPTABLE, UNLESS OTHERWISE
- 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
 OF AIRPORTS" MATERIALS AND CONSTRUCTION METHODS NOT 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.

- BARBED WIRE:
 BARBED WIRE SHALL BE ZINC COATED, MEETING REQUIREMENTS OF ASTM A 121, CLASS 3, WIRE SHALL BE TWO STRAND TWISTED DATE OF THE SHALL BE 21RG COVALED, MEETING REQUIREMING OF ASIM A 121, COURS 3, WIRE SHALL BE TWO STAND 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 SPICING 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.

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 ILL 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 GROUND RODS SHALL BE INSTALLED AT 400 MAXIMOM 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.

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.



FENCING LEGEND

X EXISTING FENCE TO REMAIN PROPOSED TEMPORARY SECURITY FENCE



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REPLACEMENT **TERMINAL AREA** DEVELOPMENT, LANDSIDE SITE PHASE I

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Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

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AEP PROJECT NUMBER 214-1882-093 & 095

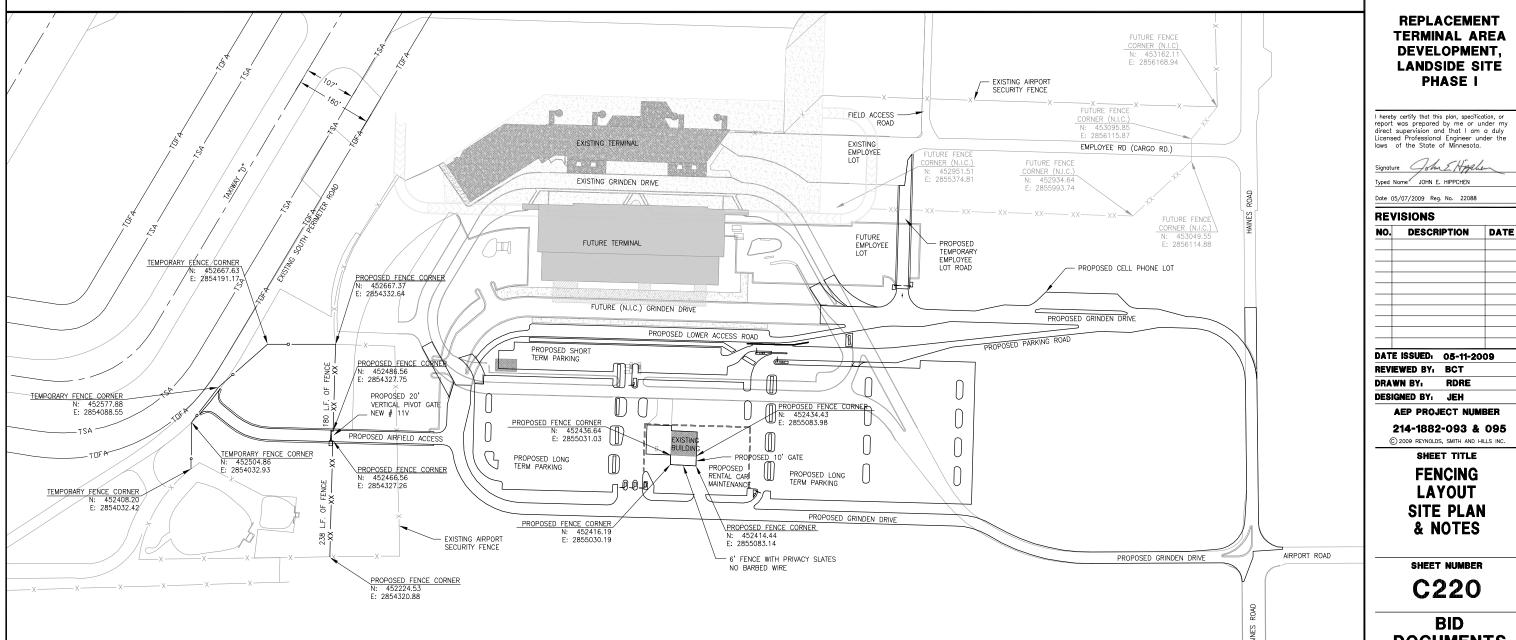
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SHEET TITLE

FENCING LAYOUT SITE PLAN & NOTES

SHEET NUMBER

C220



BOULDER/ROCK FOOTING DETAIL

TYPICAL CHAIN LINK FENCE MEMBERS, DIMENSIONS & WEIGHTS STEEL FRAME **DESCRIPTION** OUTSIDE DIMENSION (INCHES) SECTION (LBS/FT.) CORNER, BRACE, END AND PULL POSTS 2.375 3.65 2.00 3.60 FABRIC HEIGHTS 6 ft AND LESS 2.875 5.79 5.70 FABRIC HEIGHTS OVER 6 ft ALL HEIGHTS ROLL FORM 3.5x3.5 5.10 GATE POSTS 0 3 OR 4 5.79 GATE LEAF WIDTH 6 ft AND LESS 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 2.72 1.90 3.65 FABRIC HEIGHTS OVER 6 ft 0 2.375 1.660 1.806 RAILS & BRACES

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.

1.625x1.250

1.35

ROLL FORM

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.

- MAINTAIN 5' CLEAR FROM POSTS TO ANY PAVED AREA THEORETICAL POINT OF INTERSECTION FOR LAYOUT -GATE WIDTH SPECIFIED IS CLEAR OPENING BETWEEN GATE POST - MINIMUM OF THREE STRANDS OF BARBED WIRE (SEE GENERAL TRUSS ROD HEIGHT (MAX) GATE LEAF WIDTH OVER 8'-0" GATE SWING SHALL BE AS SHOWN ON CONTRACT PLAN SEE TABLE WITH CLASS "E" FENCE DETAILS FOR GATE POST DIMENSIONS 45 OFFSET AND WEIGHTS **GATE WIDTH** (SECURED SIDE) (PUBLIC SIDE) -TERMINAL POST AND BRACE SECTION ALSO REQUIRED AT ALL JUNCTIONS WITH EXISTING FENCES No. 9 GAUGE CHAIN LINK FENCE WITH BARBED SELVAGE TOP AND GRADE LEVEL ဥ 0 - LINE SECTION (DRIVEN - THIS PROJECT) TYPE No.1 (REQUIRED THIS CONTRACT) CONCRETE, SEE TABLE FOR VOLUME 10'-0" MAX. CLASS "E" (THIS CONTRACT) TYPE No. 1 ARMS SHALL BE INSTALLED ON SIDE AWAY FROM AIRPORT PROPERTY OR AIRCRAFT OPERATIONS AREA. 12" 20" 16" **BARBED WIRE EXTENSION ARMS** O GATE POST 48" 66" 66" 66" TERMINAL, END, CORNER, PULL (ANCHOR) POST **DETAIL (TYP)** 0.42 0.53 CONC. O BRACE POST * COST OF FURNISHING & PLACING

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

TYPICAL FENCE LAYOUT

= GROUND ROD (400' MAX SPACING)

ALL CLASSES

GATE POST & CONCRETE BASE

CONCRETE INCIDENTAL TO COST OF

SCHEDULE

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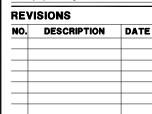


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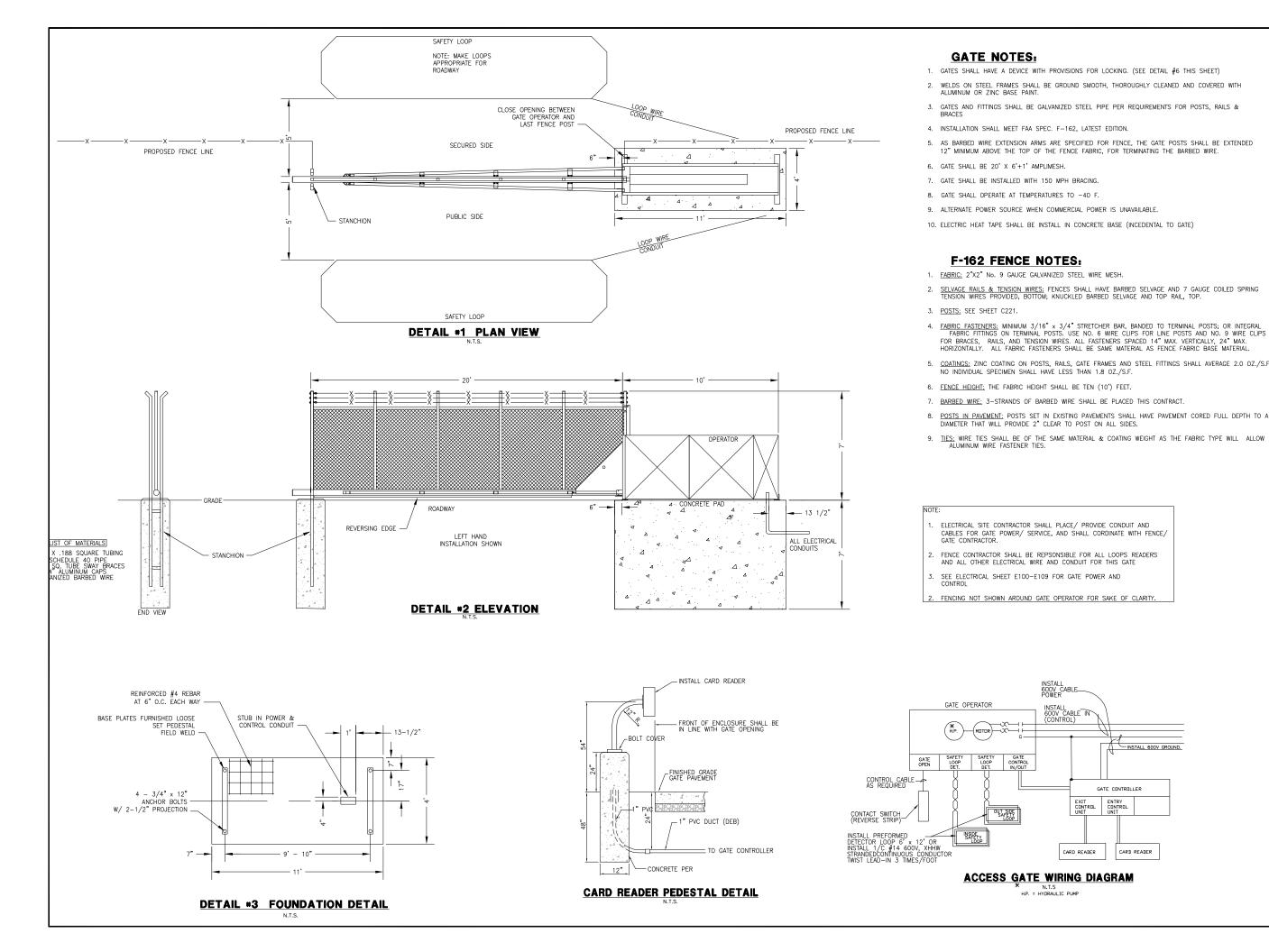
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SHEET TITLE

FENCING AND GATE **DETAILS** (SHEET 1 OF 4)

SHEET NUMBER



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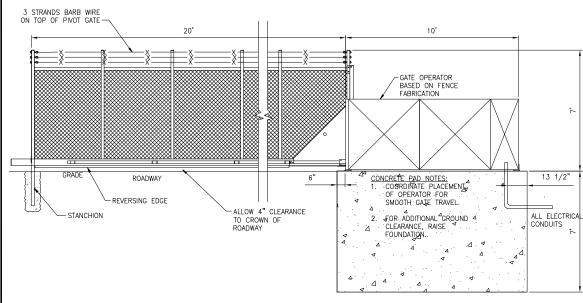
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SHEET TITLE

FENCING AND GATE **DETAILS** (SHEET 2 OF 4)

SHEET NUMBER

C222



PIVOT GATE OPERATOR DETAIL GATE OPERATOR MUST BE LOCATED ON AIRPORT

OPERATION AREA SIDE OF FENCING NTS

VERTICAL PIVOT GATE NOTES:

PROPOSED HYDRAULIC GATE OPERATORS SHALL BE IDEAL HYJD-25, OR APPROVED EQUAL. VOLTAGES AND HORSEPOWERS SHALL BE AS DETAILED. OPERATORS SHALL HAVE FULL SYSTEM CAPABILITIES AND MUST BE INTEGRATED EXISTING CHECKPOINT ACCESS AND CONTROL SYSTEM. THE OPERATOR SHALL BE MOUNTED ON A FOUNDATION PER DETAIL #3 SHEET C222.

2. PROXIMITY CARD READERS SHALL BE PROVIDED AS DETAILED AND MATCH EXISTING INSTALLATIONS. CONTROL SHALL BE VIA FIBER OPTIC CABLE AND SHALL BE INSTALLED IN PVC CONDUIT FROM CARD READERS TO GATE OPERATOR. PROVIDE TWO (2) CONCRETE BOLLARDS AROUND EACH CARD READER FOR PROTECTION.

3. PROVIDE PHOTO EYES AT EACH GATE FOR OBSTRUCTION SENSING. THE INFERRED PHOTO EYES SHALL BE EMX INDUSTRIES, INC. MODEL IRB—325 OR APPROVED EQUAL. AN INLINE CONTROL SWITCH MUST ALSO BE PROVIDED AT EACH PHOTO EYE FOR MANUAL OPERATION CONTROL WIRING SHALL BE INSTALLED IN PVC CONDUIT FROM EACH PHOTO EYE TO GATE OPERATOR.

4. THE CONTRACTOR SHALL PROVIDE A TRANSMITTER WITH AUDIBLE ALARM ON EACH GATE. THE TRANSMITTER SHALL BE MILLER EDGE MODEL MWT02 OR APPROVED EQUAL. EACH GATE SHALL BE EQUIPPED WITH A CONTACT SAFETY DEVISE ON THE BOTTOM EDGE OF THE GATE. THE CONTACT SAFETY EDGE SHALL BE MILLER EDGE ME123 SENSING EDGE OR APPROVED EQUAL

EXACT LAYOUT FOR EACH GATE OPERATOR SYSTEM IS DIFFERENT. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO COORDINATE EXACT LAYOUT WITH THE AIRPORT AND ENGINEER PRIOR

6. PROPOSED GATE OPERATORS SHALL BE OPERATED MANUALLY, BY PROXIMITY KEY CARD ACCESS, AND BY REMOTE TRANSMITTERS CONTRACTOR SHALL PROVIDE 100 KEY CARDS AND 10 TRANSMITTERS TO THE AIRPORT AT THE COMPLETION OF CONSTRUCTION FOR AIRPORT USE. ALL PROXIMITY CARDS AND TRANSMITTERS SHALL BE COMPATIBLE WITH THE EXISTING CHECKPOINT ACCESS AND CONTROL SYSTEM. ALL ENCLOSURES SHALL BE CONFIGURED IN SUCH A WAY THAT ALL ELECTRONIC COMPONENTS ARE PROTECTED FROM INCLEMENT WEATHER WHEN THE ENCLOSURE IS OPEN.

PROVIDE 1/2" PVC CONDUIT FOR LOOP WIRING FROM LOOP TO GATE OPERATOR

8. ALL ITEMS ASSOCIATED WITH INSTALLATION OF PROPOSED HYDRAULIC GATES (CONDUITS, WIRING, DISCONNECTS, CARD READERS, BOLLARDS, SENSOR LOOPS, CONTROL STATIONS, KEY CARDS, WP/GFCI RECEPTACLES, POWER PANELS ETC.) SHALL BE CONSIDERED INCIDENTAL TO EACH GATE OPERATOR AT EACH LOCATION. EACH GATE OPERATOR SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE, WHICH PRICE SHALL INCLUDE THE ASSOCIATED ITEMS SHOWN ON THE PLANS AND AS REQUIRED TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.

(INFORMATION ONLY) THE EXISTING CHECKPOINT ACCESS AND CONTROL SYSTEMS AT DULUTH INTERNATIONAL AIRPORT ARE SERVICED BY PRO-TEC DESIGN

SAFETY LOOP NOTES

THE FOLLOWING CHART MUST BE UTILIZED WHEN INSTALLING A LOOP USED FOR VEHICLE DETECTION. THIS CHART LISTS THE PREDETERMINED NUMBER OF TURNS THAT MUST BE MADE BY THE ACTUAL LOOP WIRES IN ORDER TO CREATE AN ACCEPTABLE INDUCTANCE RANGE.

LOOP DIMENSION	NUMBER OF TURNS	LOOP AREA
A) 2' X 6'	6	A) 6 - 12
B) 2'-6" X 6'	5	B) 12 - 20
C) 4' X 8'		C) 20 - 60
D) 6' X 9'	3	D) 60 - 240
E) 12' X 20'	2	E) 240 & UP

DUE TO THE LOSS OF INDUCTANCE CAUSED BY A DISTANCE GREATER THAN 490 FEET FROM THE LOOP TO THE GATE DEVICE, AN ADDITIONAL TURN OF LOOP WIRE IS RECOMMENDED DURING INSTALLATION.

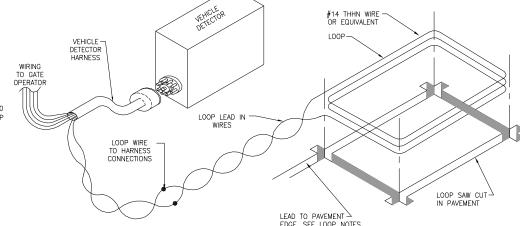
A CLEAN, SMOOTH SAW SLOT MUST BE CUT INTO THE PAVEMENT WHERE THE LOOP IS TO BE INSTALLED. THE INDUSTRY STANDARD REQUIRES THIS SLOT TO BE A MINIMUM OF 1-1/2" AND A MAXIMUM OF 3-1/2" DEEP AS A GENERAL RULE. WHEN A SOFTER PAVEMENT MATERIAL IS PRESENT, THE GREATER SAW CUT DEPTH IS PREFERRED. THIS PROTECTS THE LOOP WIRES FOR

AFTER THE LOOP SAW SLOTS HAVE BEEN CLEARED OUT, PROCEED TO TUCK THE WIRE IN THE SLOTS WITH AN OBJECT THAT WILL NOT INJURE THE WIRE INSULATION. WIND THE ACTUAL LOOP WITH #14 THHN STRANDED WIRE OR EQUIVALENT, THE WIRE MUST BE STRANDED WIRE OR EQUIVALENT. THE WIRE MUST BE RATED FOR DIRECT BURIAL AND IMPERVIOUS TO MOISTURE. THIS WILL AVOID CHANGES IN THE DIELECTRIC CONSTANT OF THE WIRE INSULATION WHICH MAY CAUSE EXCESSIVE INDUCTANCE DRIFT. IT IS
EXTREMELY IMPORTANT THAT THE LOOP BE WOUND
WITH ONE CONTINUOUS LENGTH OF WIRE. THERE ARE ABSOLUTELY NO SPLICES PERMITTED!

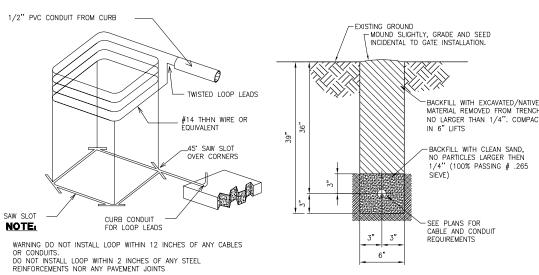
THE TWO WIRES THAT LEAVE THE LOOP AT THE CURB OR PAVEMENT AFTER THE LOOP HAS BEEN PROPERLY WOUND, MUST BE TWISTED AT A MINIMUM OF 5 TURNS PER FOOT AND TAPED TOGETHER WITH (UL) APPROVED ELECTRICAL TAPE TO PREVENT THE WIRES FROM MOVING. FAILURE TO TWIST AND SECURE THESE WIRES MAY PRODUCE A FALSE SIGNAL FROM THE LOOP.

WHEN THE LOOP INSTALLATION HAS BEEN COMPLETED, CHOOSE A SEALANT THAT CLOSELY MATCHES THE TYPE OF PAVEMENT MATERIAL PRESENT. INDUSTRY RECOMMENDS (3M) LOOP DETECTOR SEALANT. HARD SETTING EPOXIES SHOULD NOT BE USED WITH ASPHALT, AVOID HIGH TEMPERATURE SEALANTS.

VEHICLE DETECTION LOOPS SHALL BE TWO PER GATE AND BE CONFIGURED FOR SAFETY ONLY.
ALL LOOPS SHALL BE INSTALLED TO MANUFACTURERS SPECIFICATIONS AND FIELD LOCATED BY CONTRACTOR AND ENGINEER. LOOPS SHALL BE SAWCUT INTO SOUND PAVEMENT. WHERE PAVEMENT IS CRACKED BROKEN OR OTHERWISE UNSOUND, LOOPS SHALL BE INSTALLED IN SCHEDULE 80 PVC AND LOCATED IN THE GRANULAR BASE PRIOR TO NEW PAVING BY OTHERS

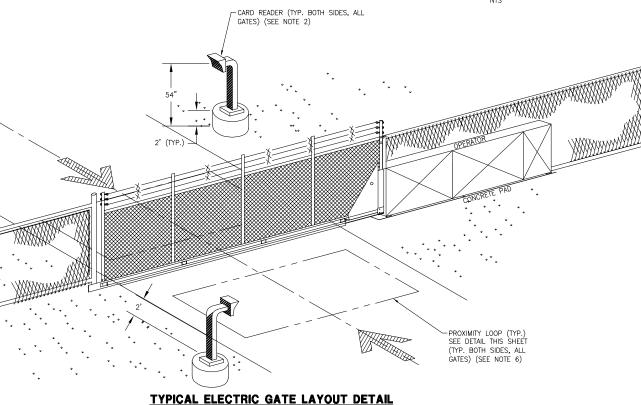


PROPOSED SAFETY LOOP DETECTOR INSTALLATION DETAIL



CONDUIT TRENCH DETAIL

(IN TURF



SAFETY LOOP INSTALLATION DETAIL



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AEP PROJECT NUMBER

DESIGNED BY: JEH

214-1882-093 & 095

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SHEET TITLE

FENCING AND GATE **DETAILS** (SHEET 3 OF 4)

SHEET NUMBER

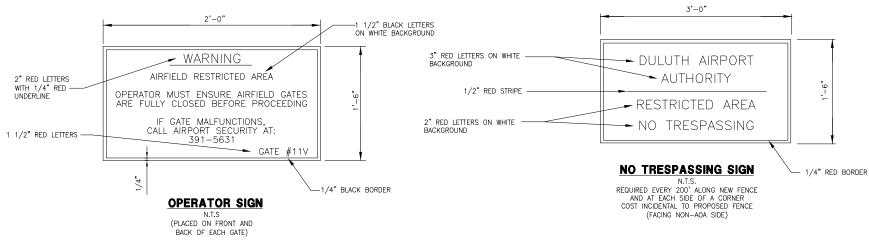
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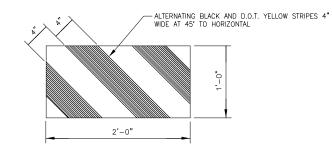
VERTICAL PIVOT GATE SHALL BE GATE # 11V

2 REQ'D EACH SIGN









BARRICADE SIGN

N.T.S.

ONE EACH FOR EACH LEAF OF GATE (BOTH SIDES)



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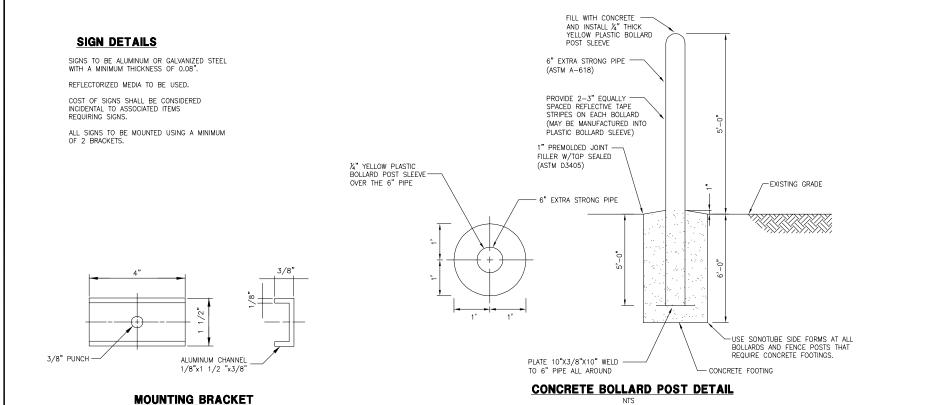
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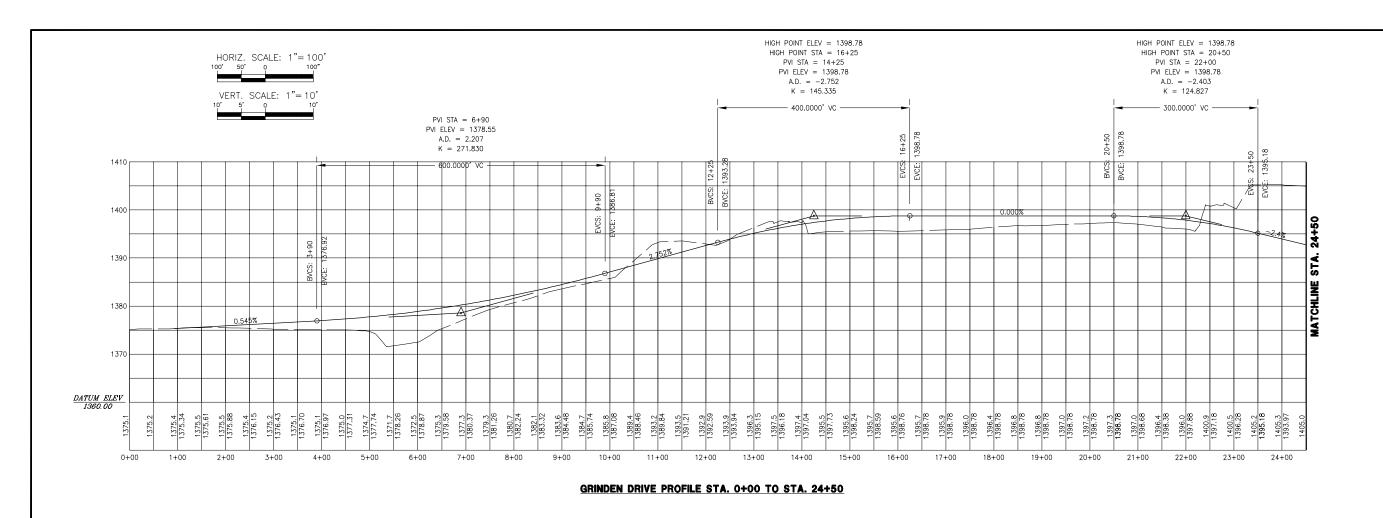
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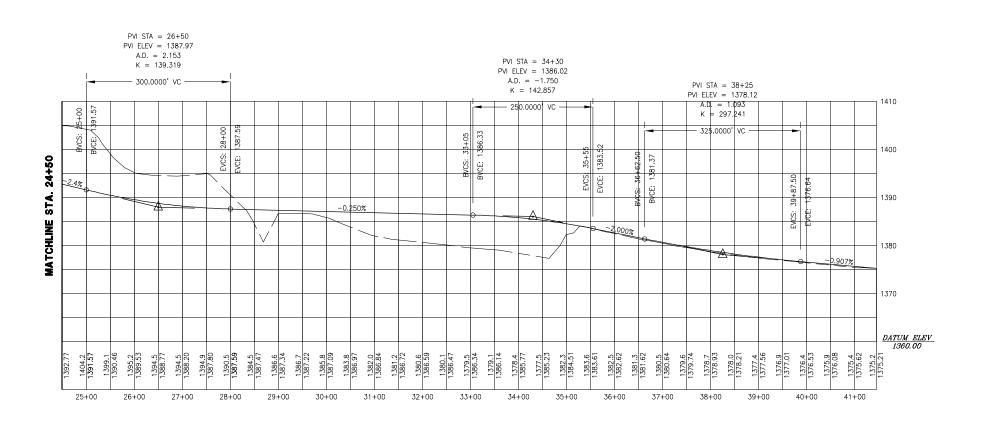
FENCING AND GATE DETAILS (SHEET 4 OF 4)

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C224







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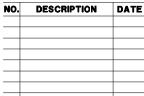
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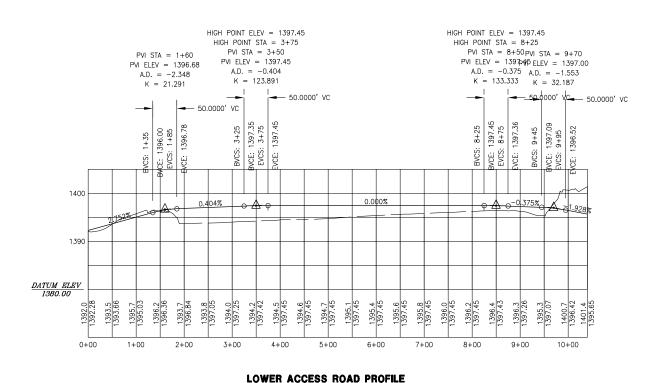
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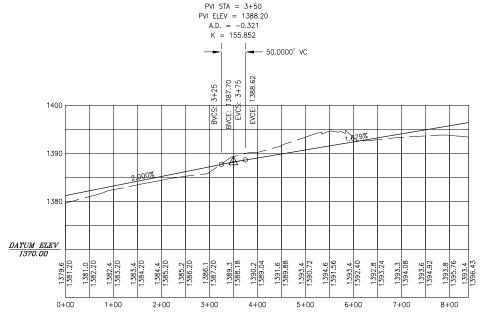
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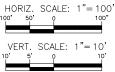
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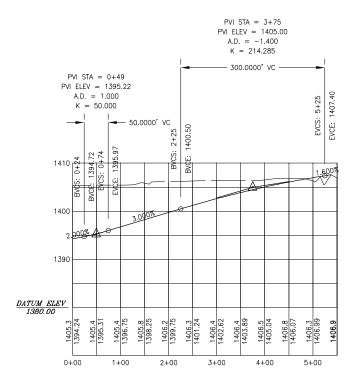


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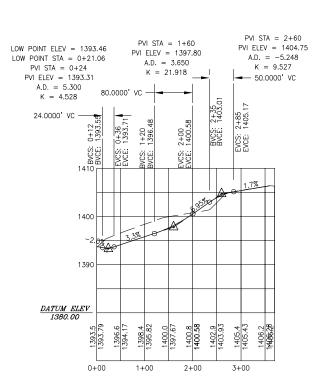


PARKING ENTRANCE ROAD PROFILE STA: 0+00 TO STA: 8+40





AIRPORT ACCESS ROAD PROFILE STA: 0+00 TO STA: 5+50.75



TEMPORARY EMPLOYEE LOT ROAD PROFILE STA: 0+00 TO STA: 3+70

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SHEET TITLE

CENTERLINE PROFILES ALL SECONDARY & TEMPORARY ROADS

SHEET NUMBER

C301

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 STABILZATION UNDER THE SOD WILL NOT BE NEEDED.

TERMINAL APRON

LEGEND - PROPOSED MAJOR CONTOUR (5')

PROPOSED MINOR CONTOUR (1') PROPOSED GRADING LIMITS

EXISTING MAJOR CONTOUR (5')

EXISTING MINOR CONTOUR (1')

PROPOSED GRADING AREA

FUTURE TERMINAL (N.I.C.)

FUTURE APRON (N.I.C.)

. . . EXISTING WETLANDS

EXISTING TERMINAL & BUILDINGS

200' WETLAND BUFFER

PROPOSED BITUMINOUS ROAD OR PARKING

- SILT FENCE TYPE: HEAVY DUTY - SILT FENCE TYPE: SUPER DUTY · — · — · — · — BIOROLL



CRITICAL ZONE

CLASS III RIP RAP W/ TYPE V

CATEGORY 2 EROSION BLANKET

- SILT FENCE TYPE: MACHINE SLICED

RAPID STABILIZATION METHOD #4 (SPEC 2575.3)

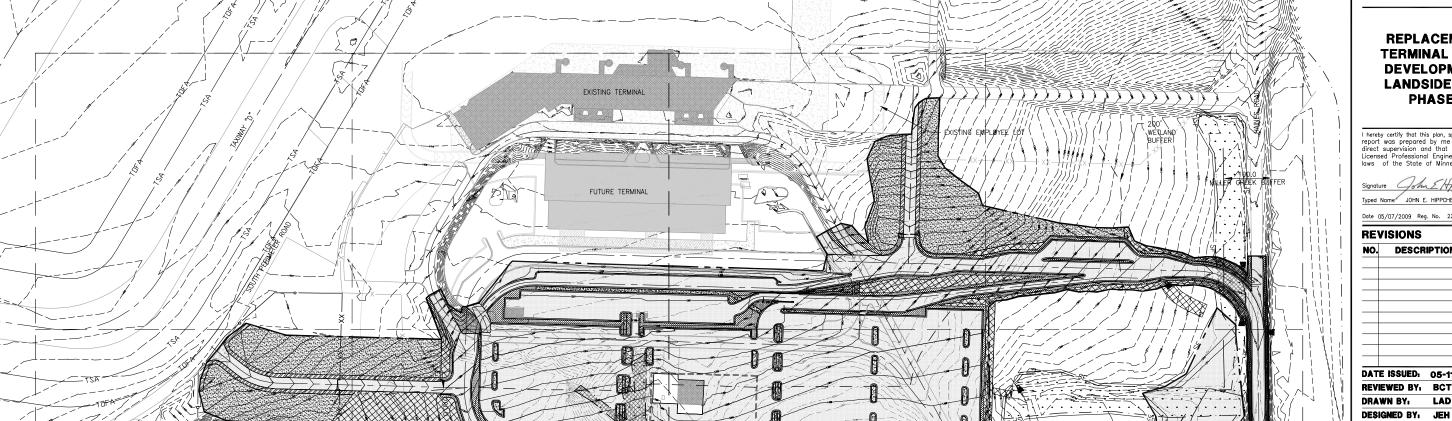
TYPE 6 HYDRO MULCH (SPEC 5884)

CLASS IV RIP RAP W/TYPE IV FABRIC AT SLOPES



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REPLACEMENT TERMINAL AREA **DEVELOPMENT,** LANDSIDE SITE PHASE I

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Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

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NO.	DESCRIPTION	DATE

DATE ISSUED: 05-11-2009

REVIEWED BY: BCT DRAWN BY:

AEP PROJECT NUMBER

214-1882-093 & 095

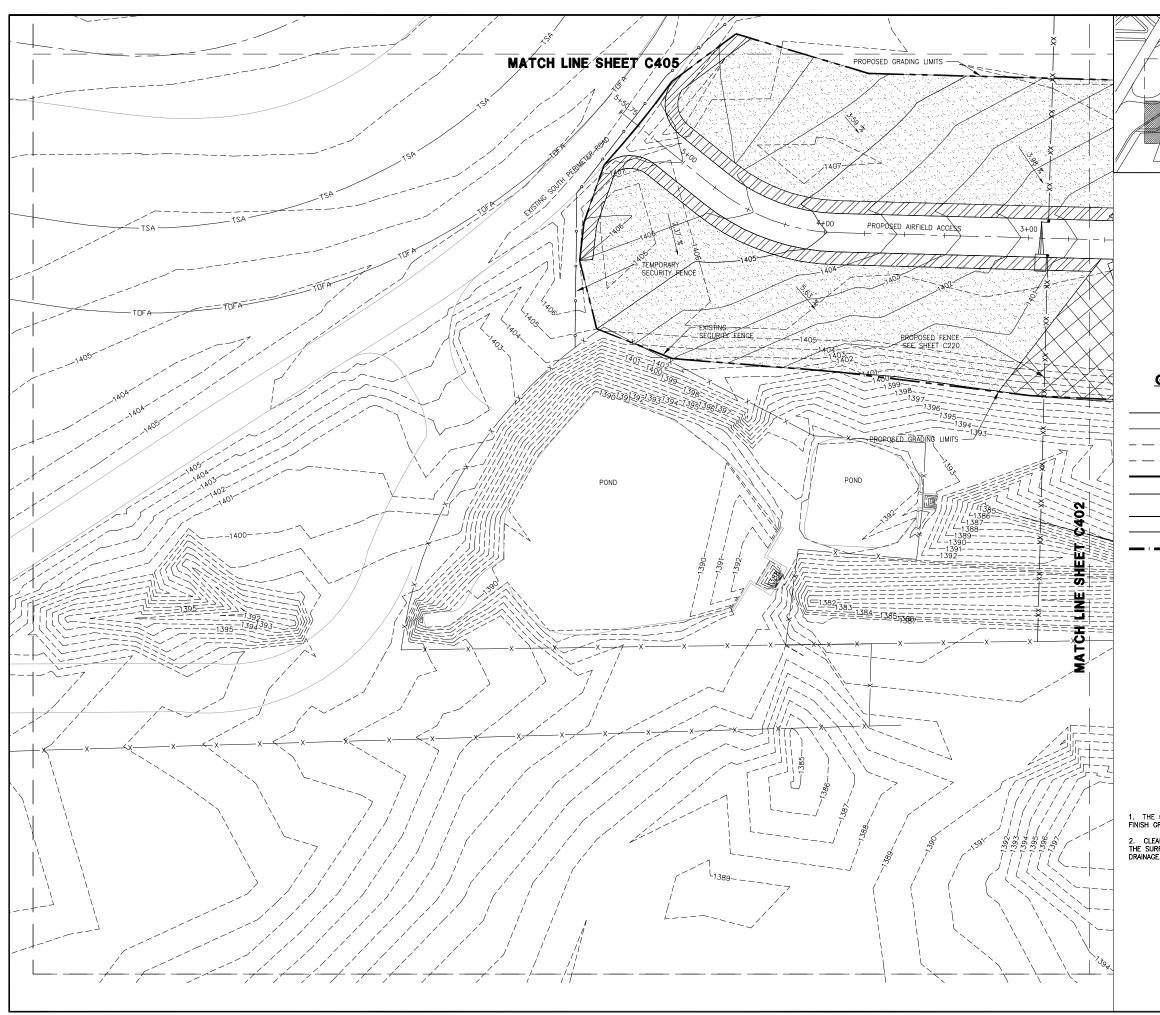
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SHEET TITLE

GRADING AND EROSION CONTROL OVERALL PLAN AND NOTES

SHEET NUMBER

C400







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GRADING AND EROSION CONTROL LEGEND

 PROPOSED MINOR CONTOUR (1') SILT FENCE TYPE: MACHINE SLICED - SILT FENCE TYPE: HEAVY DUTY - SILT FENCE TYPE: SUPER DUTY

CRITICAL ZONE

CLASS III RIP RAP W/ TYPE V

CATEGORY 2 EROSION BLANKET

RAPID STABILIZATION METHOD #4 (SPEC 2575.3) TYPE 6 HYDRO MULCH (SPEC 5884)

CLASS IV RIP RAP W/TYPE IV FABRIC AT SLOPES

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.

REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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DRAWN BY: DESIGNED BY: JEH

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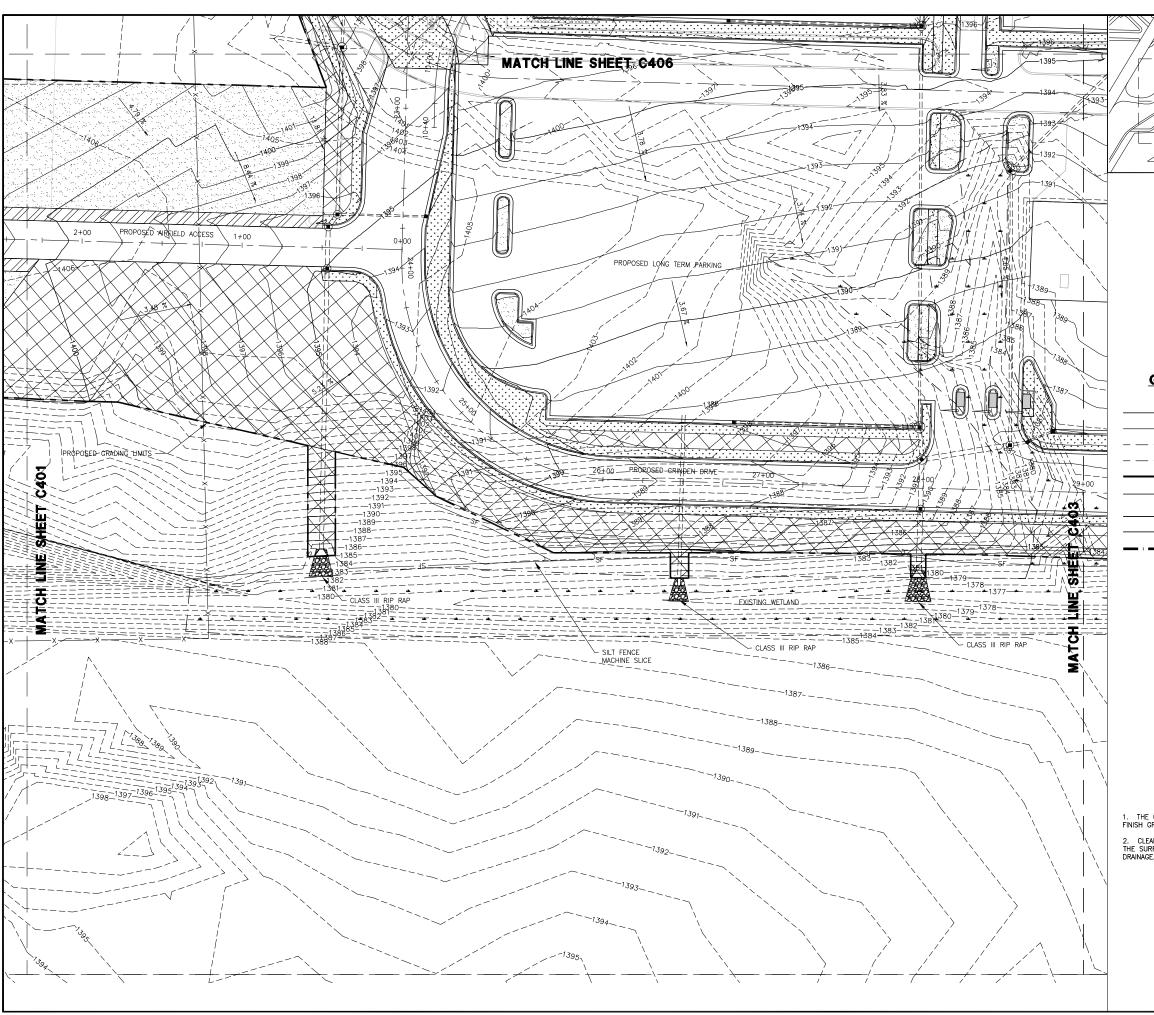
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SHEET TITLE

GRADING AND EROSION CONTROL PLAN (SHEET 1 OF 8)

SHEET NUMBER

C401





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GRADING AND EROSION CONTROL LEGEND

KEY MAP

12/0 PROPO	SED MAJOR CONTOUR (5)
1267 PROPO	SED MINOR CONTOUR (1')
— — — 1270 — — — EXISTIN	IG MAJOR CONTOUR (5')
— — — 1268 — — — EXISTIN	IG MINOR CONTOUR (1')
PROPO	SED GRADING LIMITS
SF — SILT FI MACHIN	ENCE TYPE: IE SLICED
sf — SILT FI	ENCE TYPE: HEAVY DUTY
sf — SILT FI	ENCE TYPE: SUPER DUTY

CRITICAL ZONE

CATEGORY 2 EROSION BLANKET

RAPID STABILIZATION METHOD #4
(SPEC 2575.3)

TYPE 6 HYDRO MULCH (SPEC 5884)

CLASS IV RIP RAP W/TYPE IV FABRIC AT SLOPES

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.

REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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Signature John E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

REVISIONS NO. DESCRIPTION DATE

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DRAWN BY: LAD

DESIGNED BY: JEH

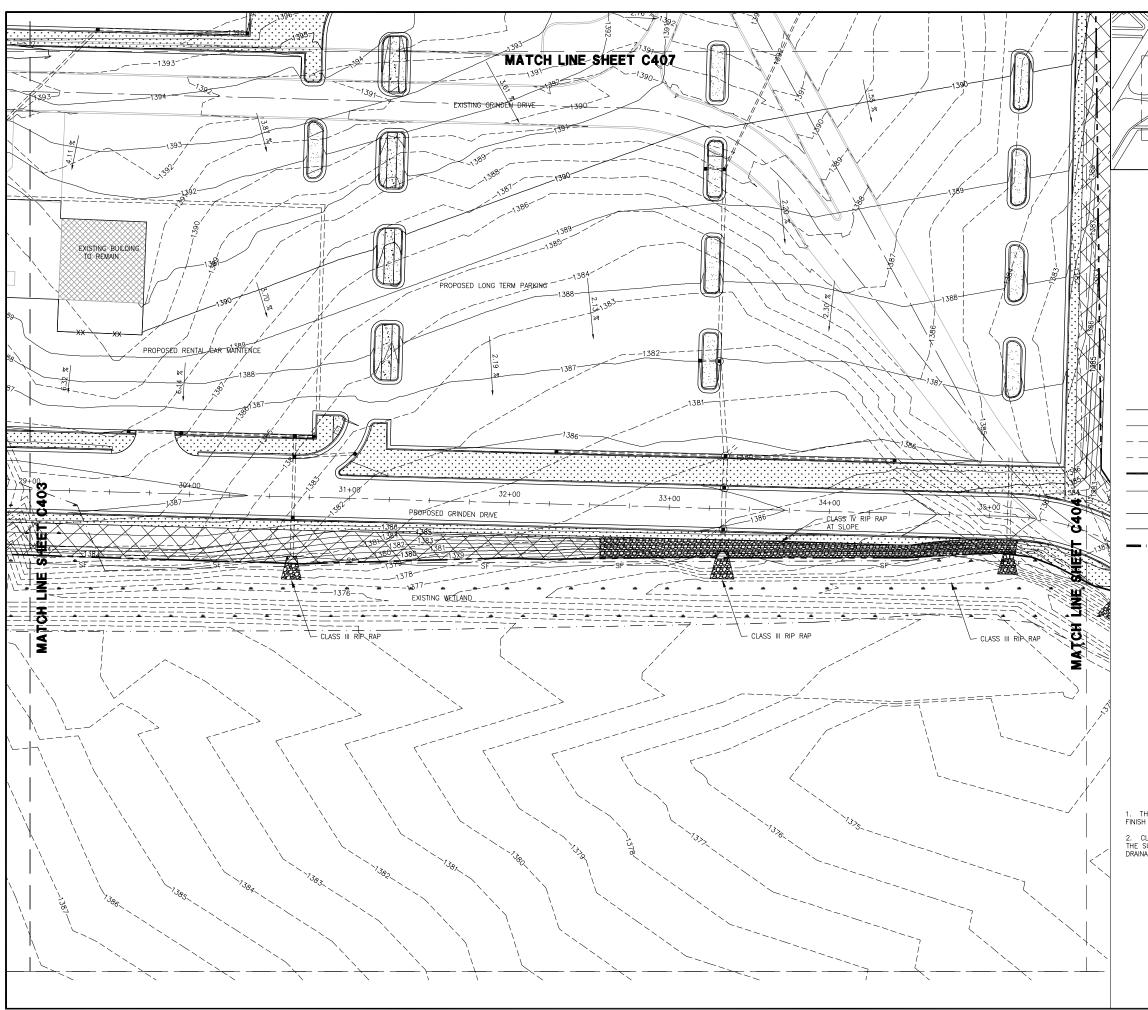
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SHEET TITLE

GRADING AND EROSION CONTROL PLAN (SHEET 2 OF 8)

SHEET NUMBER

C402







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GRADING AND EROSION CONTROL LEGEND

SILT FENCE TYPE: MACHINE SLICED - SILT FENCE TYPE: HEAVY DUTY - SILT FENCE TYPE: SUPER DUTY

CRITICAL ZONE

CLASS III RIP RAP W/ TYPE V

CATEGORY 2 EROSION BLANKET RAPID STABILIZATION METHOD #4 (SPEC 2575.3)

. TYPE 6 HYDRO MULCH (SPEC 5884)

CLASS IV RIP RAP W/TYPE IV FABRIC AT SLOPES

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.

REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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DRAWN BY: DESIGNED BY: JEH

AEP PROJECT NUMBER

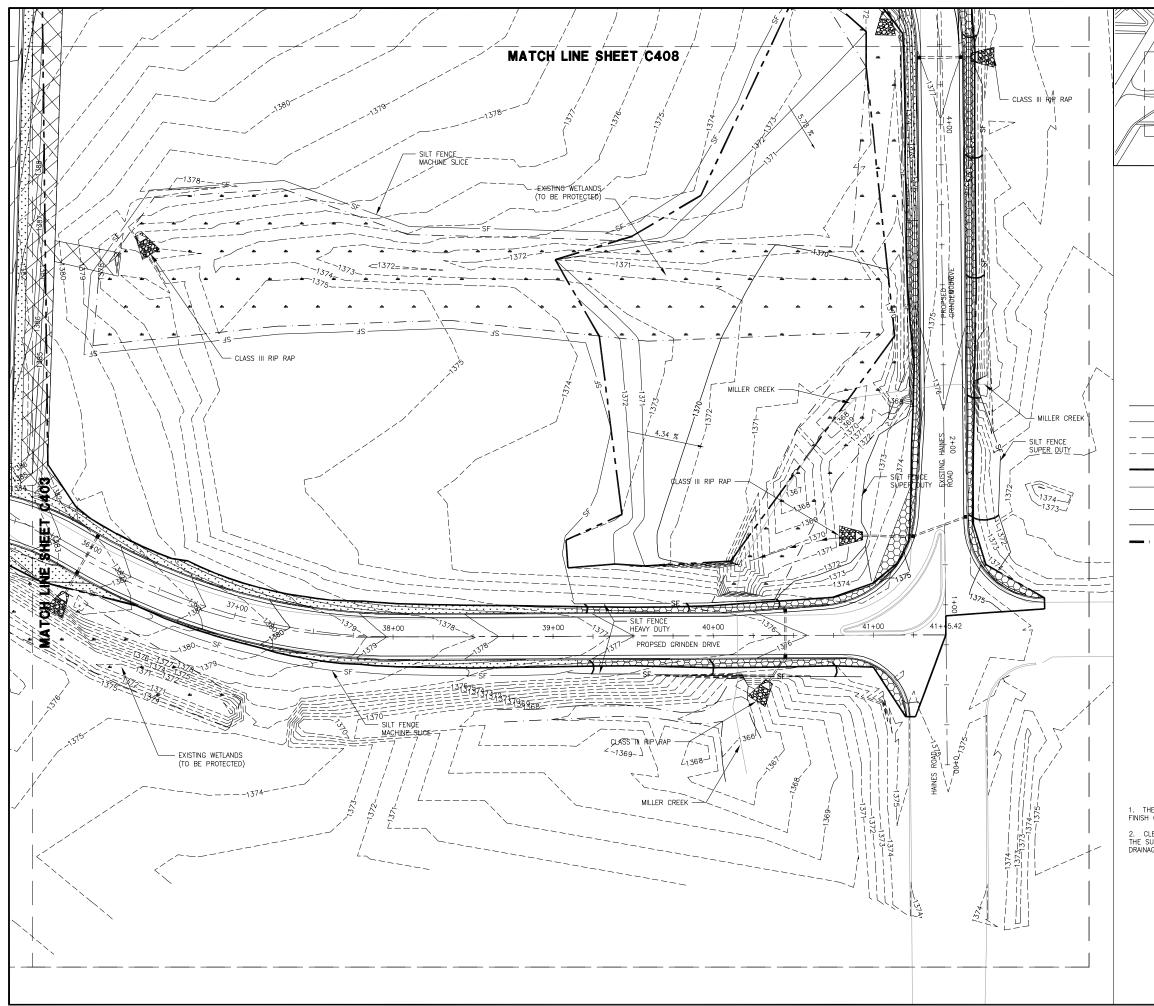
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SHEET TITLE

GRADING AND EROSION CONTROL PLAN (SHEET 3 OF 8)

SHEET NUMBER

C403







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GRADING AND EROSION CONTROL LEGEND

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

CATEGORY 2 EROSION BLANKET

RAPID STABILIZATION METHOD #4
(SPEC 2575.3)

TYPE 6 HYDRO MULCH (SPEC 5884)

CLASS IV RIP RAP W/TYPE IV FABRIC AT SLOPES

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.

REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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Date 05/07/2009 Reg. No. 22088

REVISIONS

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DATE ISSUED: 05-11-2009
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DRAWN BY: LAD
DESIGNED BY: JEH

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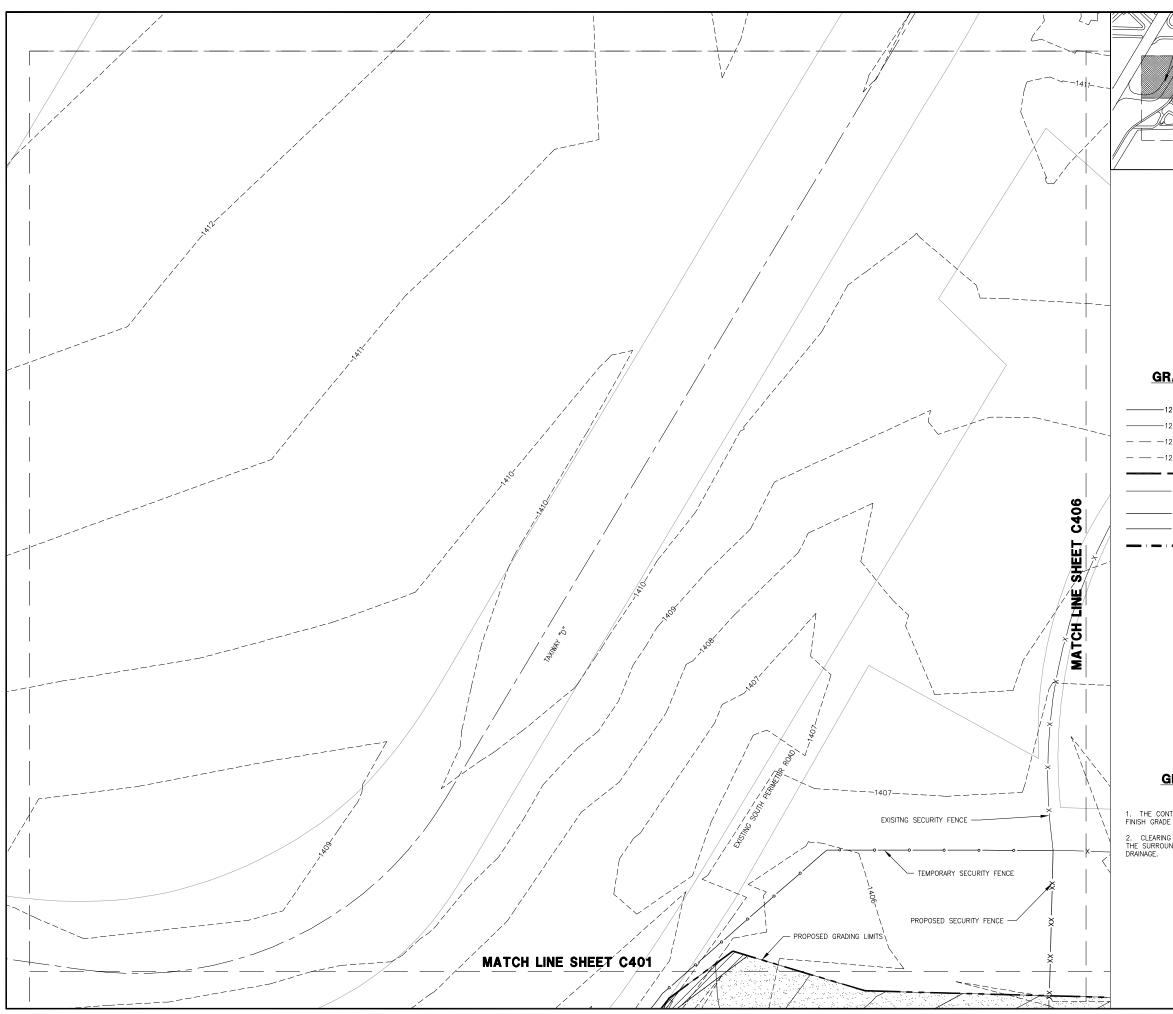
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SHEET TITLE

GRADING AND EROSION CONTROL PLAN (SHEET 4 OF 8)

SHEET NUMBER

C404





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GRADING AND EROSION CONTROL LEGEND

KEY MAP

NORTH

BIOROLL CRITICAL ZONE

CLASS III RIP RAP W/ TYPE V

CATEGORY 2 EROSION BLANKET

RAPID STABILIZATION METHOD #4
(SPEC 2575.3)

TYPE 6 HYDRO MULCH (SPEC 5884)

CLASS IV RIP RAP W/TYPE IV FABRIC AT SLOPES

GRADING AND EROSION CONTROL NOTES

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REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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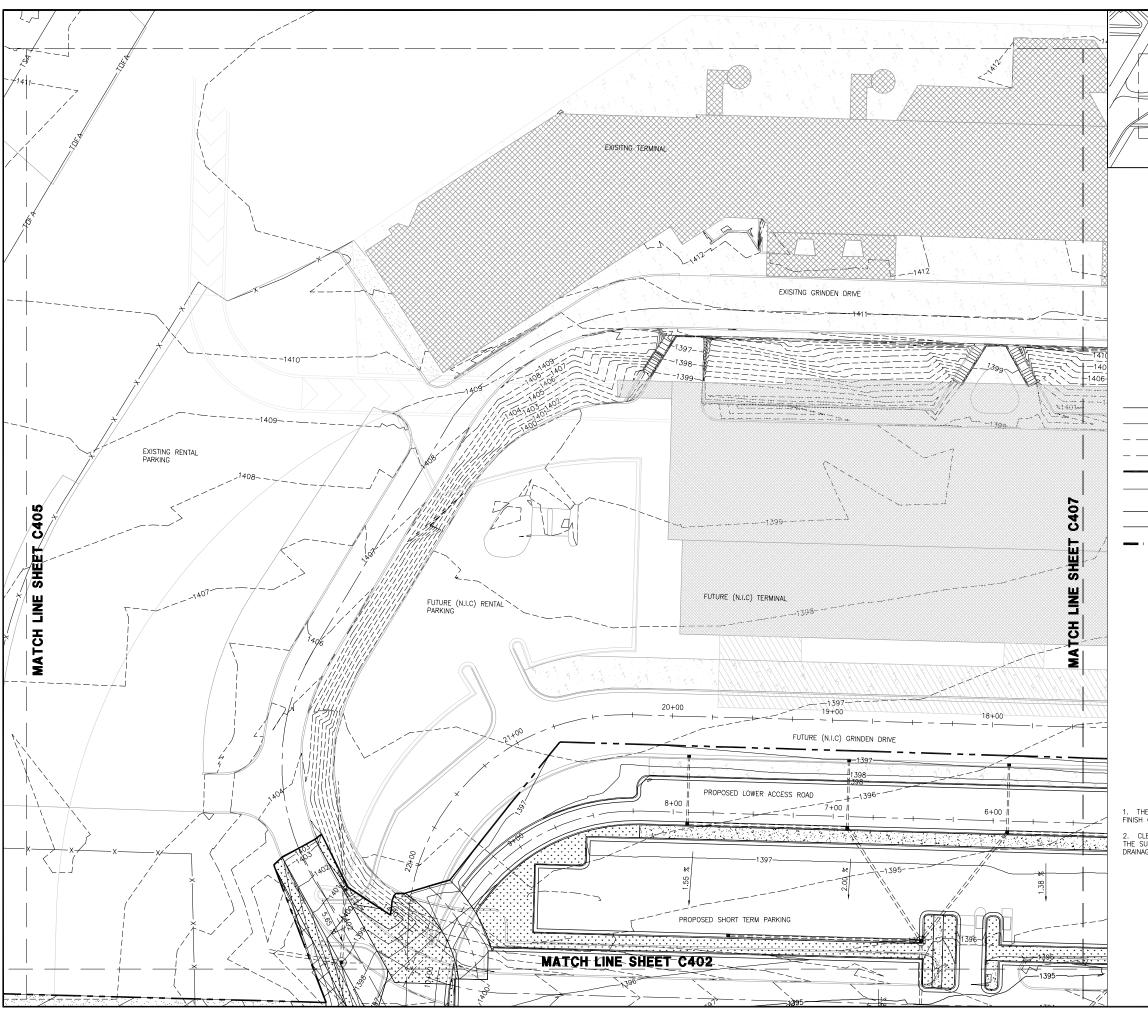
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SHEET TITLE

GRADING AND EROSION CONTROL PLAN (SHEET 5 OF 8)

SHEET NUMBER

C405





NORTH



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GRADING AND EROSION CONTROL LEGEND

PROPOSED MAJOR CONTOUR (5')

1267 — PROPOSED MINOR CONTOUR (1')

1270 — EXISTING MAJOR CONTOUR (5')

1268 — EXISTING MINOR CONTOUR (1')

PROPOSED GRADING LIMITS

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

CATEGORY 2 EROSION BLANKET

RAPID STABILIZATION METHOD #4
(SPEC 2575.3)

TYPE 6 HYDRO MULCH (SPEC 5884)

CLASS IV RIP RAP W/TYPE IV FABRIC AT SLOPES

GRADING AND EROSION CONTROL NOTES

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

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REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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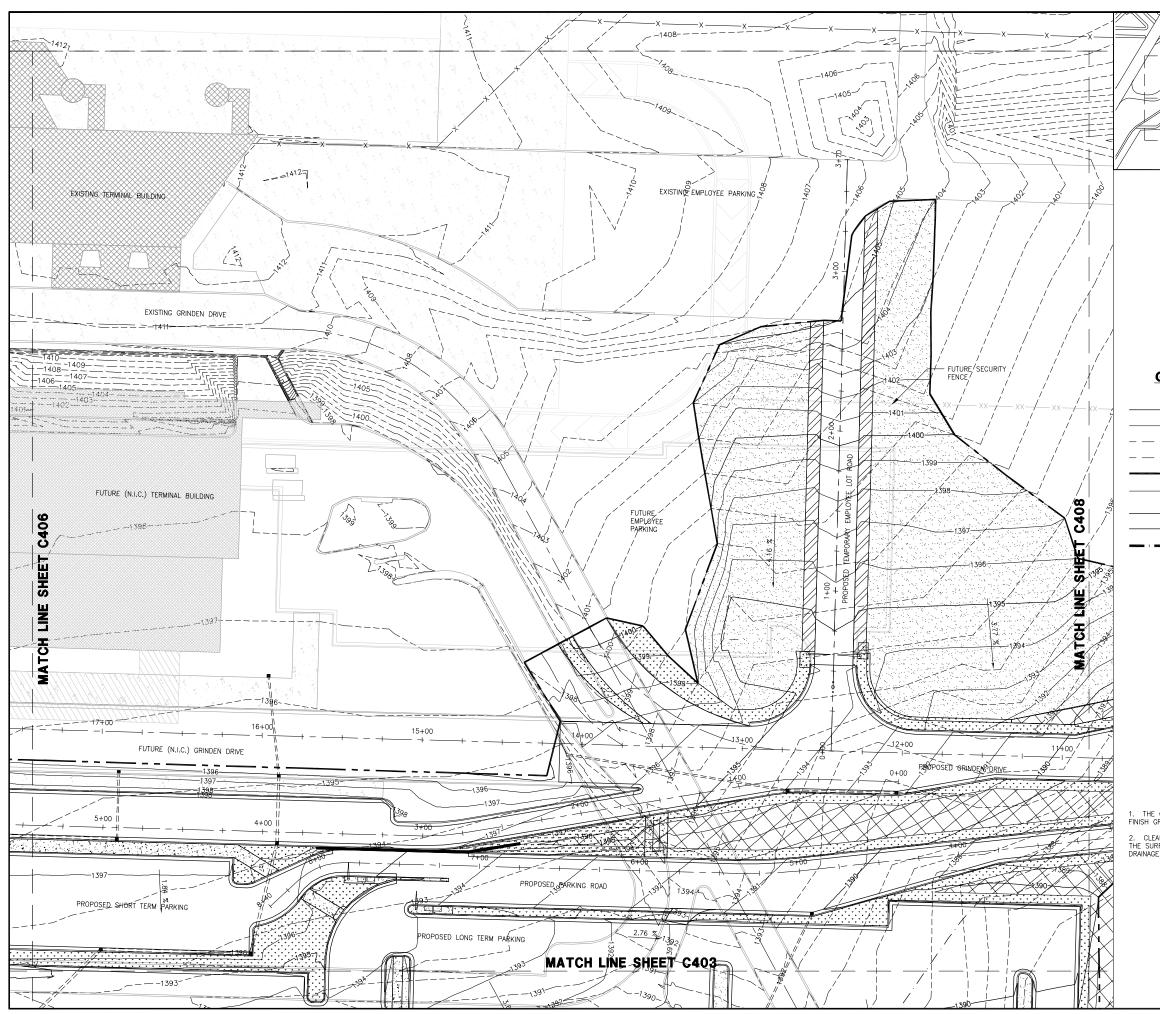
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SHEET TITLE

GRADING AND EROSION CONTROL PLAN (SHEET 6 OF 8)

SHEET NUMBER

C406





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GRADING AND EROSION CONTROL LEGEND

KEY MAP

NORTH

CRITICAL ZONE

CLASS III RIP RAP W/ TYPE FABRIC

CATEGORY 2 EROSION BLANKET

RAPID STABILIZATION METHOD #4

(SPEC 2575.3)

Type 6 Hydro Mulch (SPEC 5884)

CLASS IV RIP RAP W/TYPE IV FABRIC AT SLOPES

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

REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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Signature John E. HippChen
Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

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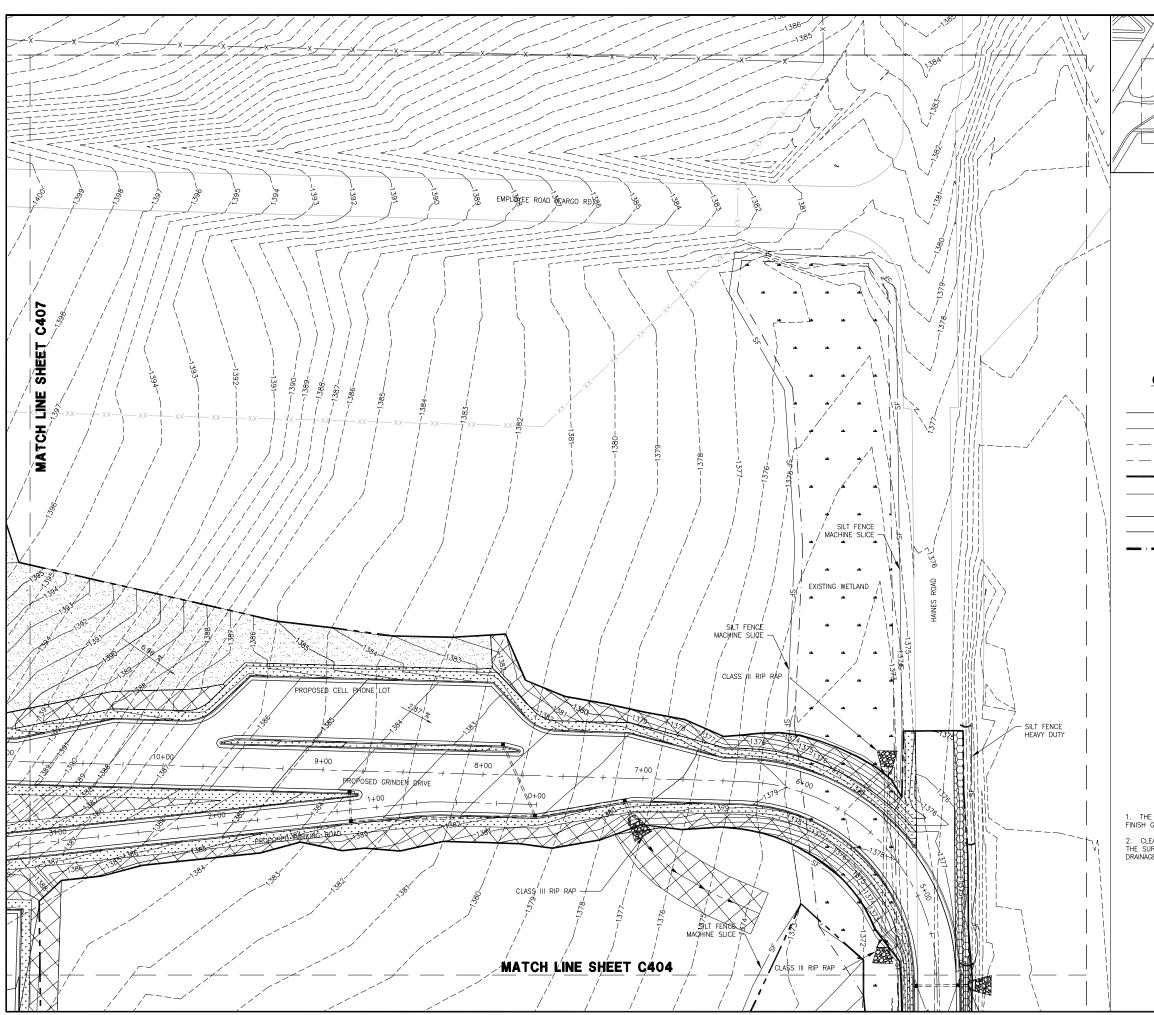
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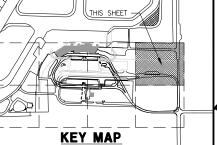
SHEET TITLE

GRADING AND EROSION CONTROL PLAN (SHEET 7 OF 8)

SHEET NUMBER

C407





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GRADING AND EROSION CONTROL LEGEND TERM

CRITICAL ZONE

CLASS III RIP RAP W/ TYPE V

CATEGORY 2 EROSION BLANKET

RAPID STABILIZATION METHOD #4
(SPEC 2575.3)

TYPE 6 HYDRO MULCH (SPEC 5884)

CLASS IV RIP RAP W/TYPE IV FABRIC AT SLOPES

GRADING AND EROSION CONTROL NOTES

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

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REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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Signature John E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

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DATE ISSUED: 05-11-2009
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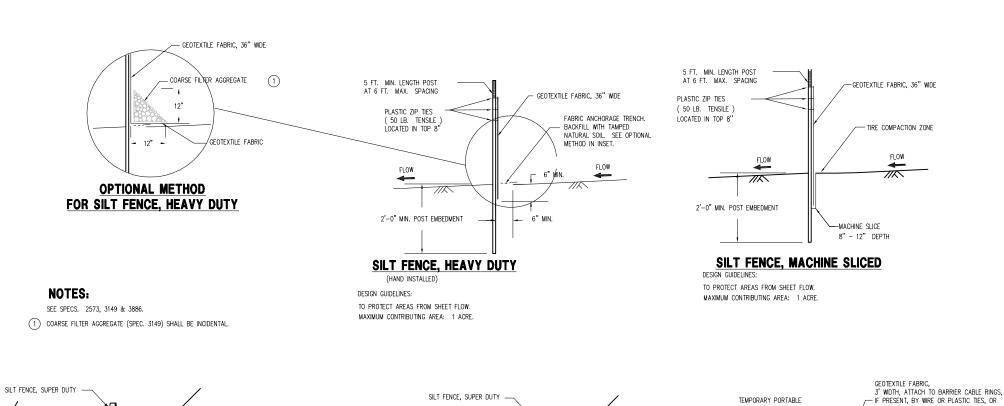
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SHEET TITLE

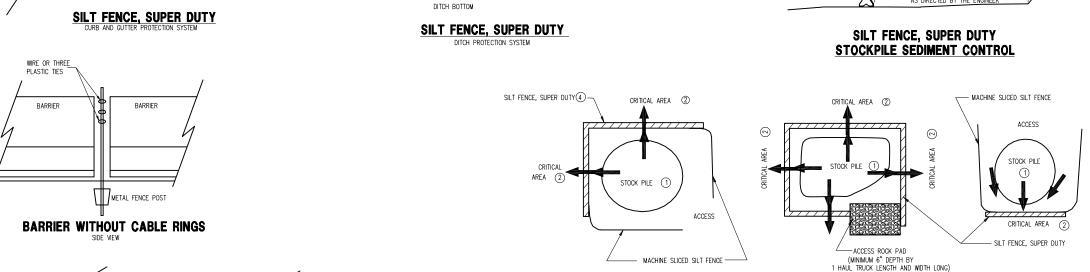
GRADING AND EROSION CONTROL PLAN (SHEET 8 OF 8)

SHEET NUMBER

C408

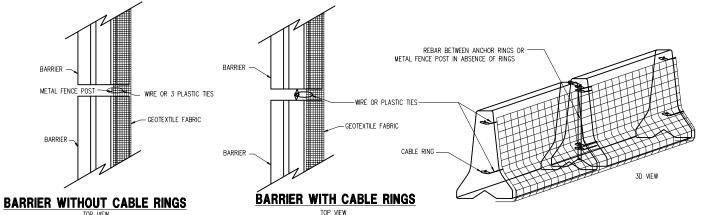


SILT FENCE, SUPER DUTY



STOCK PILE

OR STEEP SLOPE



STOCK PILE

OR STEEP SLOPE

SILT FENCE, SUPER DUTY STOCK PILE CONTAINMENT

TEMPORARY PORTABLE PRECAST CONCRETE BARRIER

DESIGN 8337 (TYPICAL) (SEE STANDARD PLATE 8337)

NOTES:

1 PLACING STOCK PILES NEXT TO AN ENVIRONMENTALLY SENTITIVE AREA IS NOT RECOMMENDED. WHEN THERE ARE NO FEASIBLE ALTERNATIVES, THE SUPER DUTY SILT FENCE IS TO BE USED AS SHOWN OR AS DIRECTED BY THE ENGINEER.

TO METAL FENCE POST WITH WIRE OR THREE

8' BUFFER MINIMUM.

AS DIRECTED BY THE ENGINEER

STOCK PILE

OR STEEP SLOPE

- 2 CRITCAL AREAS INCLUDE WETLANDS, JUDICIAL DITCHES, STREAMS, WATER BODIES, AND OTHER AREAS REQUIRING PROTECTION.
- (3) FOR CERTAIN APPLICATIONS PLASTIC WATER FILLED BARRIERS MAY BE USES IN PLACE OF CONCRETE BARRIER OR LINEAR RUNS OF SHEET PILE.
- (4) INSTALL TO FIT LAND FORM AND ITEM TO PROTECT.

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227 WEST FIRST STREET, SUITE 200 DULUTH, MINNESOTA 55802 Ph: 218.727.3282 Fx: 218.727.1216 www.krechojard.com

REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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Typed Name PETER J. MARTHALER

Date 05/07/2009 Reg. No. 45009

REVISIONS

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REVIEWED BY: PJM DRAWN BY:

AEP PROJECT NUMBER

DESIGNED BY: DJL

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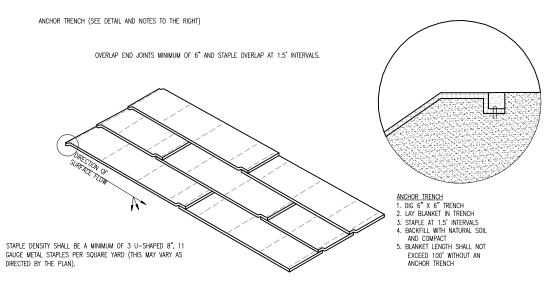
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SHEET TITLE

EROSION, AND SEDIMENTATION CONTROL NOTES AND DETAILS 1 OF 7

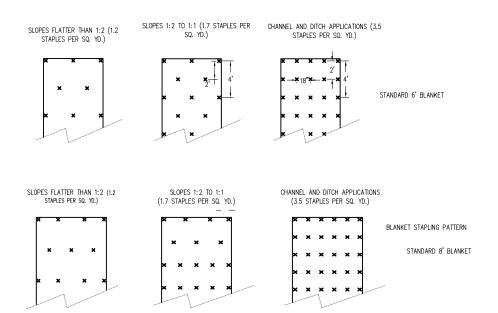
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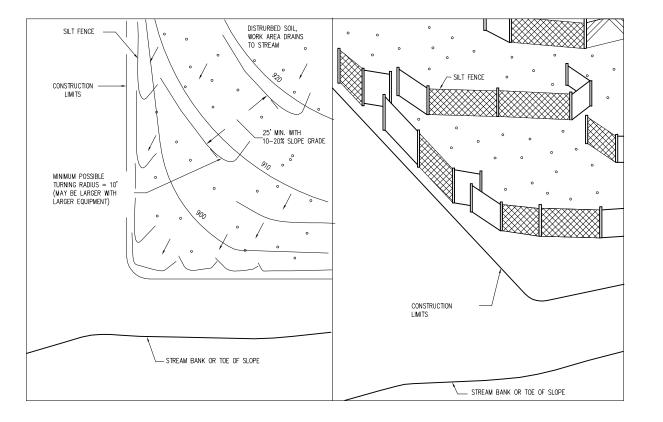
C409



OVERLAP LONGITUDINAL JOINTS MINIMUM OF 6"

EROSION BLANKET INSTALLATION







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REPLACEMENT **TERMINAL AREA** DEVELOPMENT, LANDSIDE SITE PHASE I

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Date 05/07/2009 Reg. No. 45009

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DRAWN BY: SCA DESIGNED BY: DJL

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SHEET TITLE

EROSION, AND SEDIMENTATION CONTROL NOTES AND DETAILS 2 OF 7

SHEET NUMBER

C410

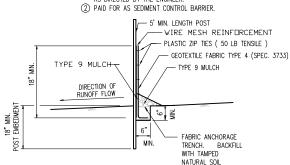
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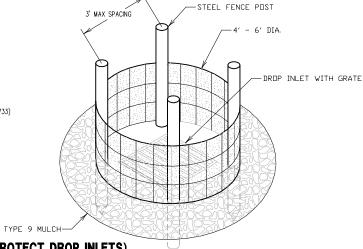
THE SEDIMENT CONTROL BARRIER SHALL BE A METAL OR PLASTIC/POLYETHELENE RISER SIZED TO FIT INSIDE THE CATCH BASIN MANHOLE. HAVE PERFORATIONS TO ALLOW FOR WATER INFILTRATION; HAVE AN OVERFLOW OPENING,

FLANGES AND A LID/COVER.

① USE INLET PROTECTION TYPE A OR TYPE 9 MULCH,

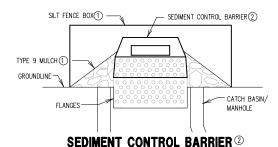
AS DIRECTED BY THE ENGINEER.



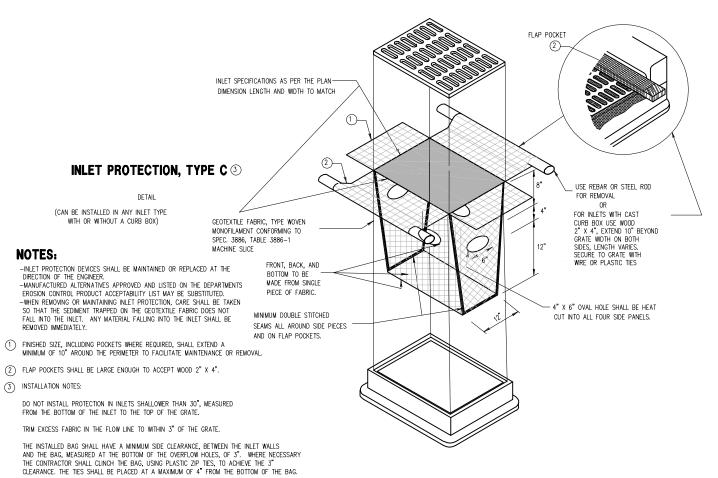


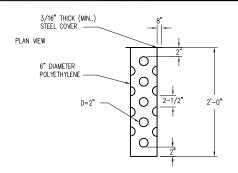
INLET PROTECTION TYPE A (SILT FENCE TO PROTECT DROP INLETS)

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

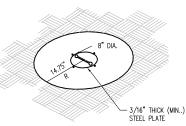


-INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE ENGINEER.
-MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENTS FROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED - WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE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

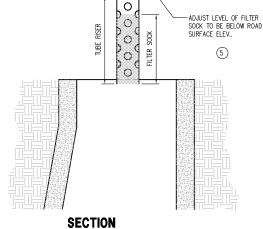


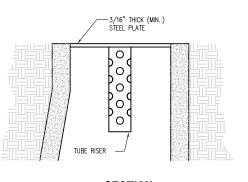


TUBE RISER



PERSPECTIVE VIEW





SECTION (DOWN POSITION

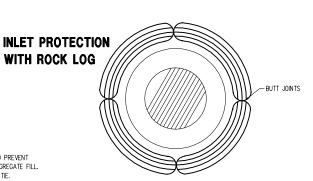
WIMCO EROSION BARRIER POP-UP HEAD

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.

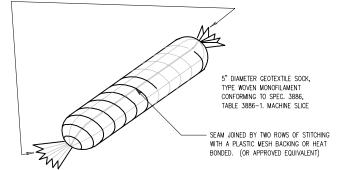
FILL ROCK LOG WITH 45 LBS. OF OPEN GRADED AGGREGATE CONSISTING OF SOUND, DURABLE PARTICLES OF CRUSHED QUARRY ROCK OR GRAVEL CONFORMING TO THE FOLLOWING GRADATION.

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.



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



TEMPORARY DITCH CHECK. TYPE ROCK LOG **DETAIL**



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REPLACEMENT TERMINAL AREA DEVELOPMENT. LANDSIDE SITE PHASE I

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 under the laws of the State of Minnesota.

E Whom Typed Name PETER J. MARTHALER

Date 05/07/2009 Reg. No. 45009

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DRAWN BY: SCA DESIGNED BY: DJL

AEP PROJECT NUMBER

214-1882-093

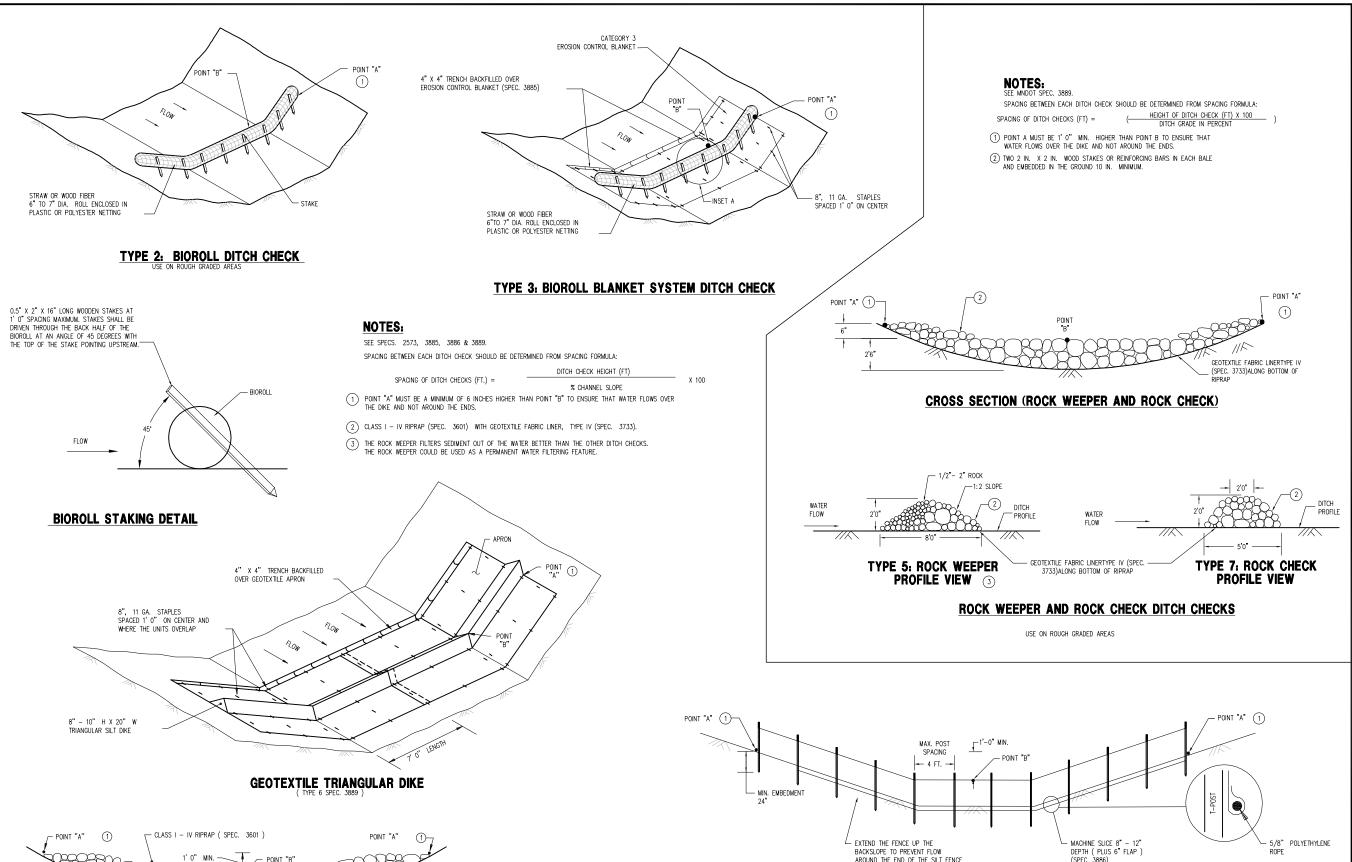
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SHEET TITLE

EROSION, AND SEDIMENTATION **CONTROL NOTES AND DETAILS** 3 OF 7

SHEET NUMBER

C411



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REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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EROSION, AND SEDIMENTATION CONTROL NOTES AND DETAILS 4 OF 7

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C412

BID **DOCUMENTS**

AROUND THE END OF THE SILT FENCE

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)

ROCK CHECK

CROSS SECTION

GEOTEXTILE FABRIC LINER TYPE IV (SPEC. 3733)

ALONG BOTTOM OF RIPRAP

WATER

FLOW

PROFILE VIEW

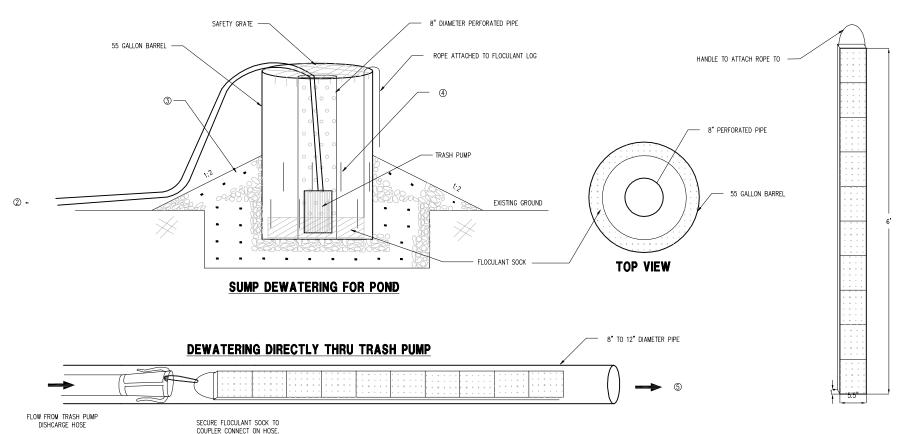
ROCK DITCH CHECK SHALL

FINAL ACCEPTANCE.

BE REMOVED FROM THE CLEAR

ZONE AFTER SEEDING OR TURF

IS ESTABLISHED AND PRIOR TO

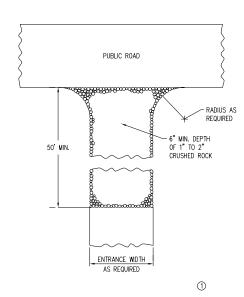


NOTES

- DEWATERING DEVICE SHOULD BE PLACED AT THE LOW POINT OF THE AREA TO DRAIN
 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" SUTS 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



ROCK CONSTRUCTION ENTRANCE

NOTES:

SEE SPECS. 2573, 3892, & 3894.

① ROCKS AT ENTRANCE CLEAN WORKSITE MUD OFF OF TRUCK TIRES BEFORE TRUCKS ENTER MAIN ROAD. KEEPING MUD OFF THE ROAD WILL PREVENT AUTO DAMAGE AND KEEP CONSTRUCTION SEDIMENT OUT OF DRAINAGE SYSTEMS AND WETLANDS. GEOTEXTILE MAY BE PLACED UNDER THE ROCK TO KEEP ROCKS SEPARATE FROM SOIL.



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REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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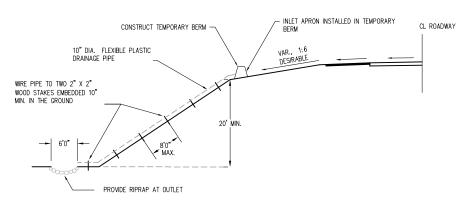
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EROSION, AND SEDIMENTATION

CONTROL NOTES AND DETAILS 5 OF 7

SHEET NUMBER

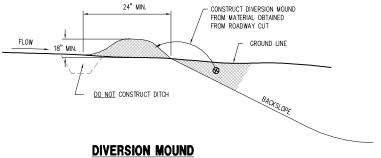
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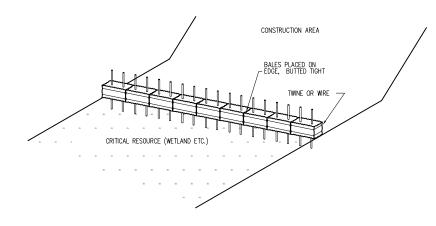
TEMPORARY DOWN DRAIN ON FILL SLOPE

(SPEC 3892)

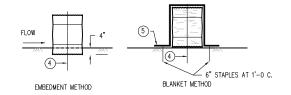
DESIGN GUIDELINES: STORM FREQUENCY: 2 YEAR - 24 HOUR MAXIMUM DRAINAGE AREA: 3 ACRES



DESIGN GUIDELINES: STORM FREQUENCY: 10 YEAR - 24 HOUR MAXIMUM DRAINAGE AREA: 5 ACRES MAXIMUM DIVERSION: GRADE 5%



BALE BARRIERS (SPEC. 2573)



BALE BARRIER DETAIL

NOTES:

SEE SPECS. 2573, 3892, & 3894.

- (1) ROCKS AT ENTRANCE CLEAN WORKSITE MUD OFF OF TRUCK TIRES BEFORE TRUCKS ENTER MAIN ROAD. KEEPING MUD OFF THE ROAD WILL PREVENT AUTO DAMAGE AND KEEP CONSTRUCTION SEDIMENT OUT OF DRAINAGE SYSTEMS AND WETLANDS.
- 2 W = 10 FT. MIN., 20 FT. MAX.
- \bigcirc D = 2 FT.
- (4) TWO 2 IN. X 2 IN. WOOD STAKES OR REINFORCING BARS IN EACH BALE EMBEDDED 10 INCHES MINIMUM IN THE GROUND.
- (5) PLACE A CATEGORY 3 EROSION CONTROL BLANKET, 6 FT. WIDE MINIMUM, OVER THE BALE INSTEAD OF TRENCHING.



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REPLACEMENT **TERMINAL AREA** DEVELOPMENT, LANDSIDE SITE PHASE I

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EROSION, AND SEDIMENTATION CONTROL NOTES AND DETAILS 6 OF 7

SHEET NUMBER

C414

GENERAL NOTES

- 1. THESE PLANS ARE PART OF THE <u>GENERAL STORM WATER PERMIT FOR CONSTRUCTION ACTIVITY</u> 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 ARE	A EXISTING AREA	COMPLETED AREA	CHANGED AREA
IMPERVIOUS PERVIOUS	17.88 AC 27.12 AC	20.7 AC	2.9 AC
TOTAL	45.0 AC	24.2 AC	-2.9 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 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.F. 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

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

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 FTC.) DO NOT NFFD 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 GUILLIES. 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 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. PERMIS 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 CUBB 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
- 7. THE PERMITTEE MUST INSTALL TEMPORARY SEDIMENTATION BASINS AS REQUIRED IN PART III.B.

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:
- FINDINGS OF INSPECTIONS, INCLUDING RECOMMENDATIONS FOR CORRECTIVE ACTIONS:
- d. CORRECTIVE ACTIONS TAKEN (INCLUDING DATES, TIMES, AND PARTY COMPLETING MAINTENANCE
- e. DATE AND AMOUNT OF ALL RAINFALL EVENTS GREATER THAN 1/2 INCH (0.5 INCHES) IN 24
- 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 LINTU 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 ENSURI 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
- 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 LINTU ANOTHER PERMITTEE HAS ASSUMED CONTROL ACCORDING TO PART II.B.5 OVER ALL AREAS OF THE SITE THAT HAVE NOT BEEN FINALI 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 BASINS SHOWN ON THE "TEMPORARY EROSION AND SEDIMENT CONTROL PLAN"
 - 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
- 2. CHANGES TO THE ABOVE DESCRIBED SEQUENCE OR TO THE CONSTRUCTION SEQUENCE FURNISHED BY THE CONTRACTOR ARE ALLOWED PROVIDED THAT

SECTIONS 1.D AND 1.E AND APPENDIX C.E.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.

. 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
- 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

SODDING SHALL COMPLY WITH SECTION 6.22 OF THE MPCA REFERENCE

3. ALL AREAS WITHIN THE BOUNDARIES OF LAND DISTURBING ACTIVITIES SHALL BE STABILIZED IN ACCORDANCE WITH THE LEGEND ON SHEETS C400-C408.

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227 WEST FIRST STREET, SUITE 200

REPLACEMENT TERMINAL AREA DEVELOPMENT. LANDSIDE SITE PHASE I

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Signature & Maran

Typed Name PETER J. MARTHALER

Date 05/07/2009 Req. No. 45009

DEVISIONS

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DATE ISSUED: 05-11-2009 REVIEWED BY: PJM

DRAWN BY: SCA DESIGNED BY: DJL

AEP PROJECT NUMBER

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SHEET TITLE

EROSION, AND SEDIMENTATION **CONTROL NOTES** AND DETAILS 7 OF 7

SHEET NUMBER

C415

BID **DOCUMENTS**

8. THE CONTRACTOR SHALL TAKE ALL POSSIBLE PRECAUTIONS TO PREVENT APPRECIABLE SOIL TRACKING ONTO

REPAIRED/REPLACED/CLEANED. MAINTAIN WRITTEN LOG OF ALL WEEKLY AND RAIN EVENT INSPECTIONS — INCLUDE THE CORRECTIVE ACTIONS THAT WERE TAKEN.

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 PAYMENT ALLOWED SHALL BE PER CONTRACT OR IN ABSENCE OF CONTRACT BID PRICE IN ACCORDANCE WITH MNDOT SPECIFICATION

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.
- 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

- RECYCLARIE MATERIALS MUST BE SEPARATED ON-SITE AND SEGREGATED IN DESIGNATED CONTAINERS A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR WILL COLLECT ALL SANITARY WASTE FROM THE PORTABLE UNITS AT A RATE NECESSARY TO MAINTAIN DESIGNED FUNCTION. ALL VEHICLES ON SITE WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO
 - ALL VEHICLES ON SITE WILL BE MONITORED FOR LEARS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE IC REDUCE THE CHANCE OF LEAKAGE.
 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.
 - SEALABLE BIN TO REDUCE THE CHANGE 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.
 - ANY ASPHALT SUBSTANCES USED ON SITE WILL BE APPLIED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS
 - 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 -800-422-0798.
 - 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
 - OFFICIAL CONTROLL.

 10. 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.

APPROVED FLOCCULANT MAY BE NECESSAR'S

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. 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 4 AT MINIMUM THE FOLLOWING CONTROLS WILL BE IMPLEMENTED AT THE CONSTRUCTION SITE.

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

EROSION CONTROL BLANKETS SHALL BE USED ON ALL SLOPES 1:3 OR STEEPER SILT FENCES SHALL BE USED IN CONJUNCTION WITH OTHER EROSION BMPS ROCK DITCH CHECKS OR APPROVED EQUAL ARE TO BE USED TO REDUCE DITCH VELOCITIES AND REDUCE

STORM INLET AND OUTLET AREAS SHALL BE CONTINUOUSLY PROTECTED WITH MNDOT APPROVED DEVICES / METHODS

DEVICES/METHOUS
STABILIZED CONSTRUCTION ENTRANCE, OR REUSABLE MUD MAT SHALL BE USED TO REDUCE SEDIMENT TRACKING
PERMANENT VEGETATION WILL BE ESTABLISHED RIGHT AFTER TOPSOIL IS SPREAD
CONTROL ALL SITE SOLID WASTE, DEBRIS, MATERIAL STORAGE AND CONCRETE WASHOUT ON SITE. NO MIGRATION

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.

SUBMIT INITIAL EROSION CONTROL (EC) SCHEDULE AT OR BEFORE THE PRECONSTRUCTION CONFERENCE 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

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

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 ROADWAYS. APPRECIABLE SOIL, MUD, OR DEBRIS WASHED, TRACKED, OR DEPOSITED ONTO PAVED SURFACES SHALL BE REMOVED PRIOR TO THE END OF EACH WORK DAY.

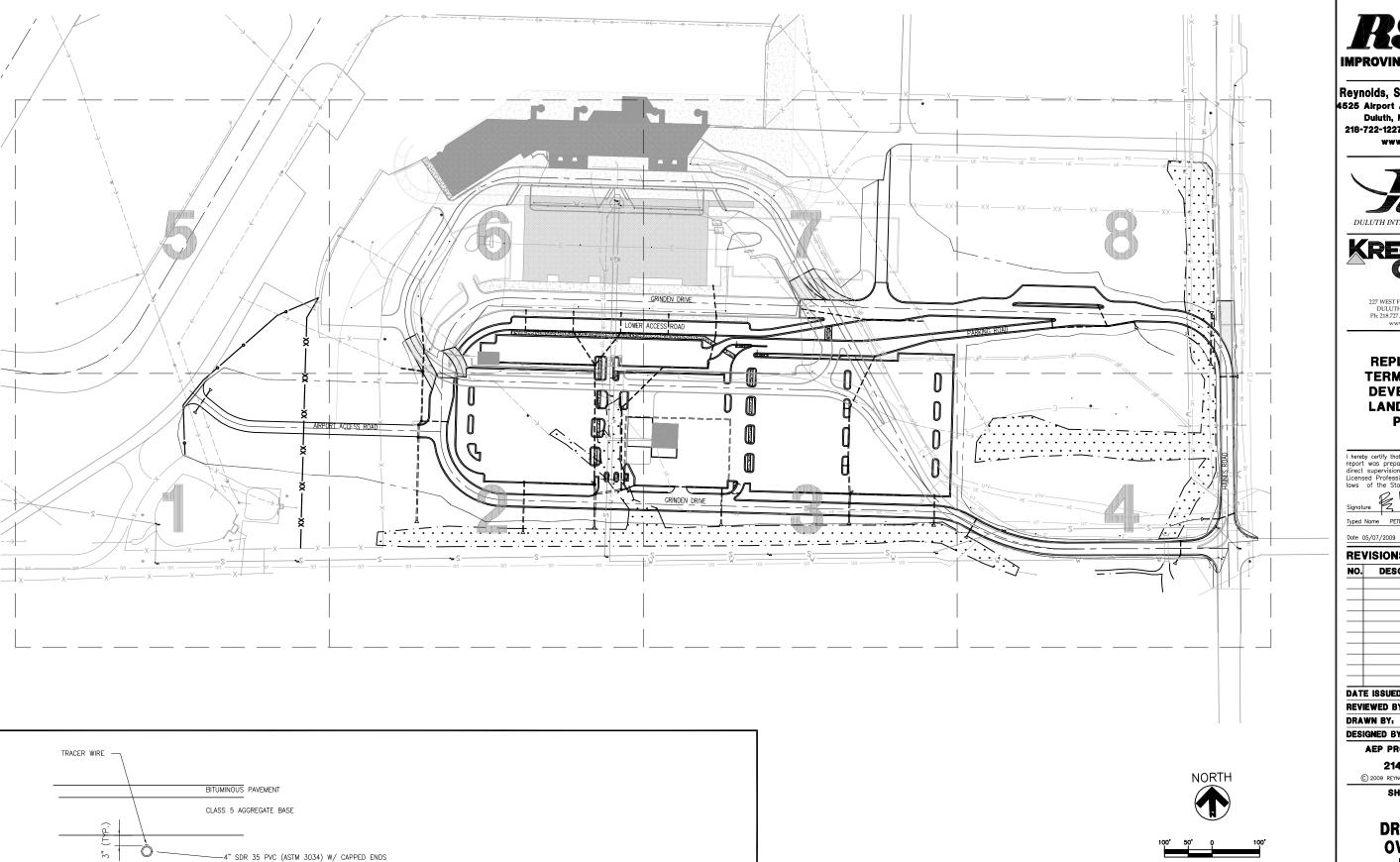
STABILIZED CONSTRUCTION ENTRANCE(S) SHALL BE REMOVED AND AREA RESTORED AFTER GRADING IS COMPLETE.

THE CONTRACTOR OC 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

11. THE CONTRACTOR SHALL MAINTAIN THE CAPABILITY TO IMPLEMENT RAPID STABILIZATION METHOD 4 (MNDOT 2573.4)

A STABILIZED CONSTRUCTION ENTRANCE/EXIT WILL BE CONSTRUCTED TO REDUCE VEHICLE TRACKING OF SEDIMENTS

3. ALL SOLID WASTE MATERIALS WILL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER OR OTHER



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REPLACEMENT **TERMINAL AREA** DEVELOPMENT, LANDSIDE SITE PHASE I

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Date 05/07/2009 Reg. No. 45009

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NO.	DESCRIPTION	DAT
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DATE ISSUED: 05-11-2009 REVIEWED BY: PJM

DESIGNED BY: DJL **AEP PROJECT NUMBER**

214-1882-093

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SHEET TITLE

DRAINAGE **OVERALL** PLAN

SHEET NUMBER

C500

BID **DOCUMENTS**

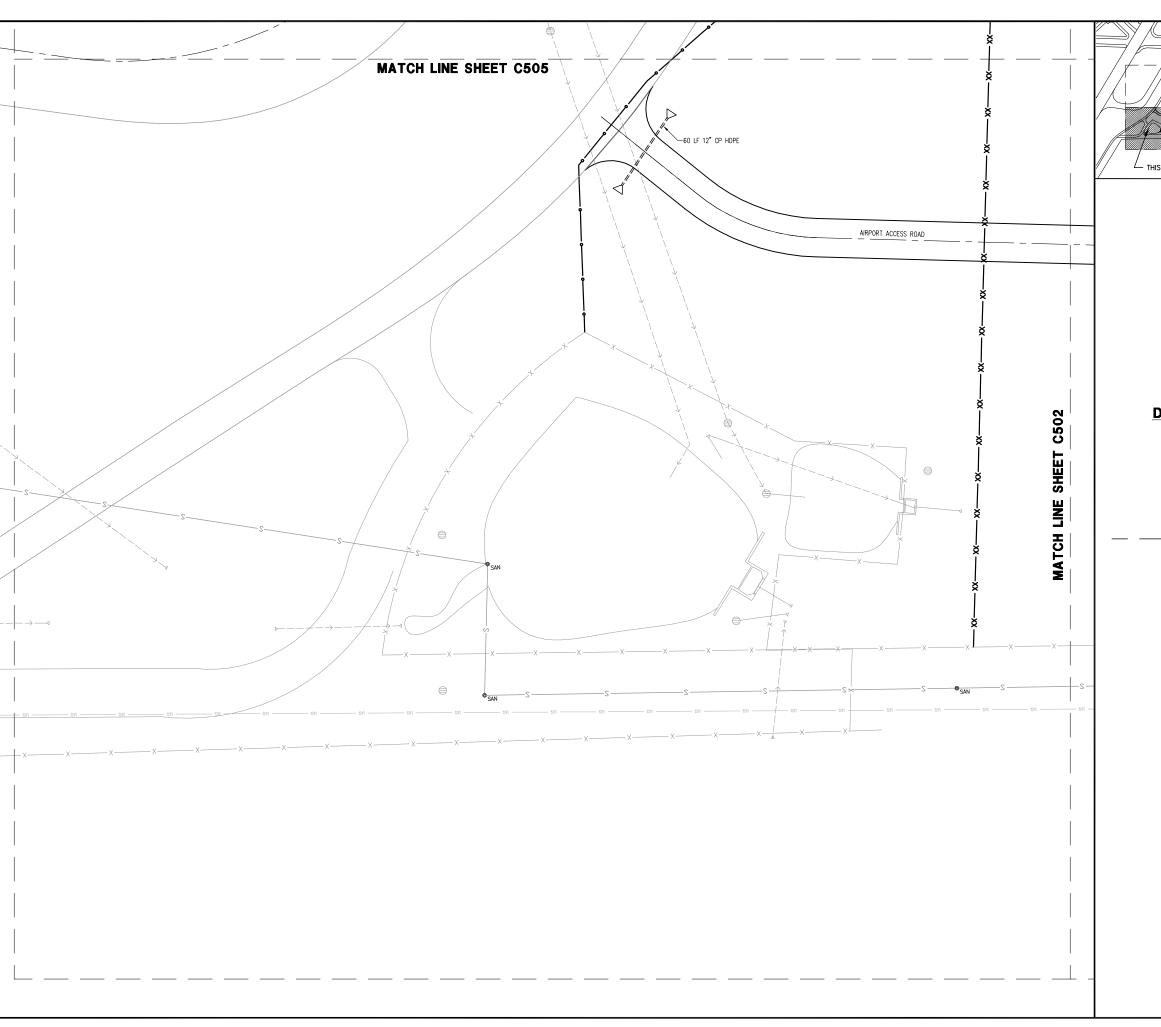
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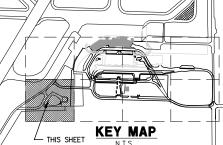
- 1) THE #6 AWG BSD COPPER COUNTERPOISE WIRE SHALL BE CENTERED THE DUCT.
- 2) EXTEND AND CAP A MINIMUM OF 2 FEET BEHIND BACK OF CURB.
- 3) THE CONTRACTOR SHALL PROVIDE SURVEY TIES OF END LOCATIONS TO ENGINEER.

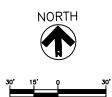
SELECT GRANULAR BACKFILL

TYPICAL IRRIGATION CONDUIT

PLACEMENT







DRAINAGE LEGEND

■ STORM STRUCTURE (48" DIA.)

STORM STRUCTURE (>48" DIA.)

CP HDPE PIPE

FLARED END SECTION

S-73 STRUCTURE NAME

> FLARED END SECTION NAME 4" PERF. PVC PIPE UNDERDRAIN

> > Date 05/07/2009 Reg. No. 45009

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DESIGNED BY: DJL

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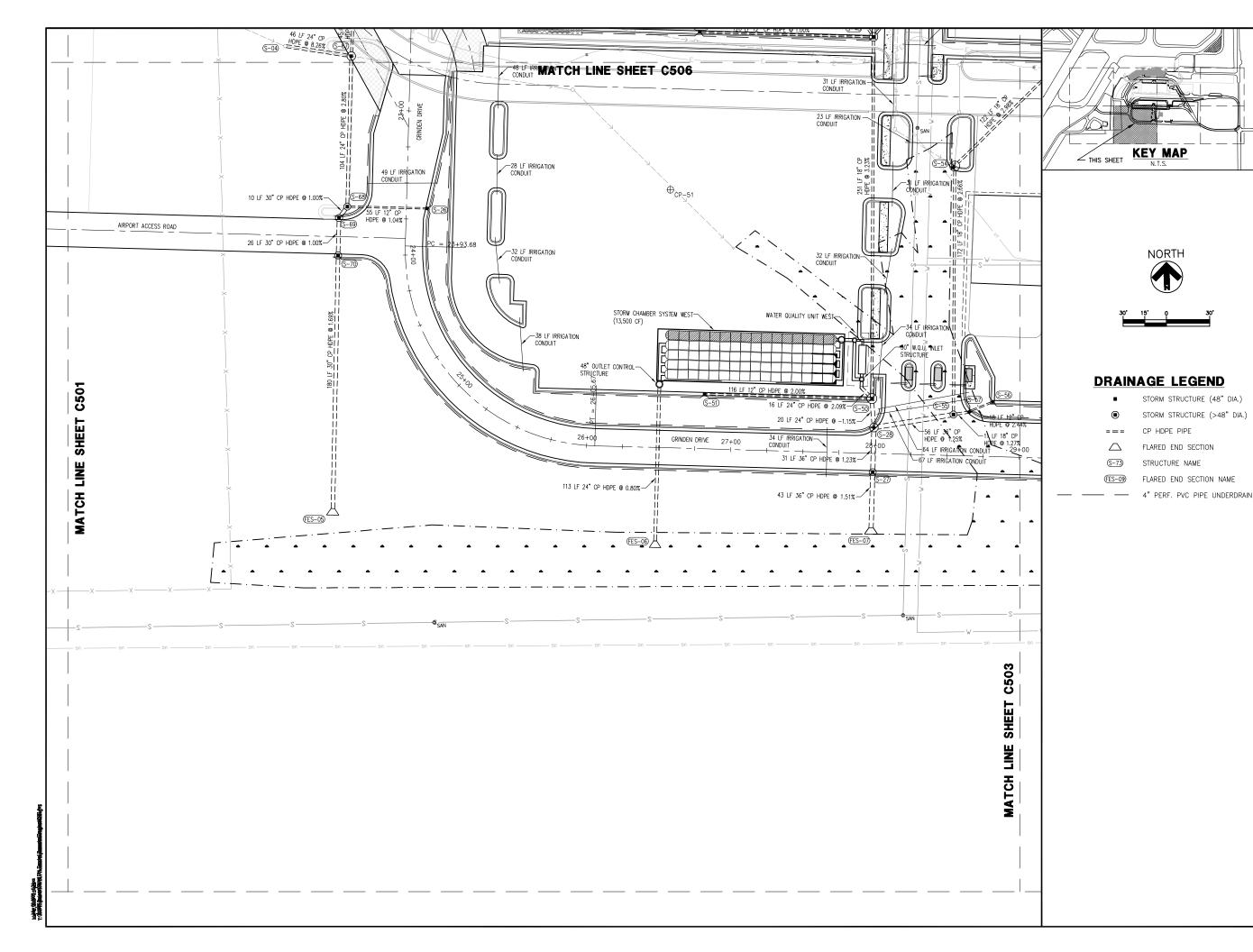
SHEET TITLE

DRAINAGE PLAN

(AREA 1)

1 OF 8 SHEET NUMBER

C501





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Date 05/07/2009 Reg. No. 45009

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DRAWN BY: KLG
DESIGNED BY: DJL

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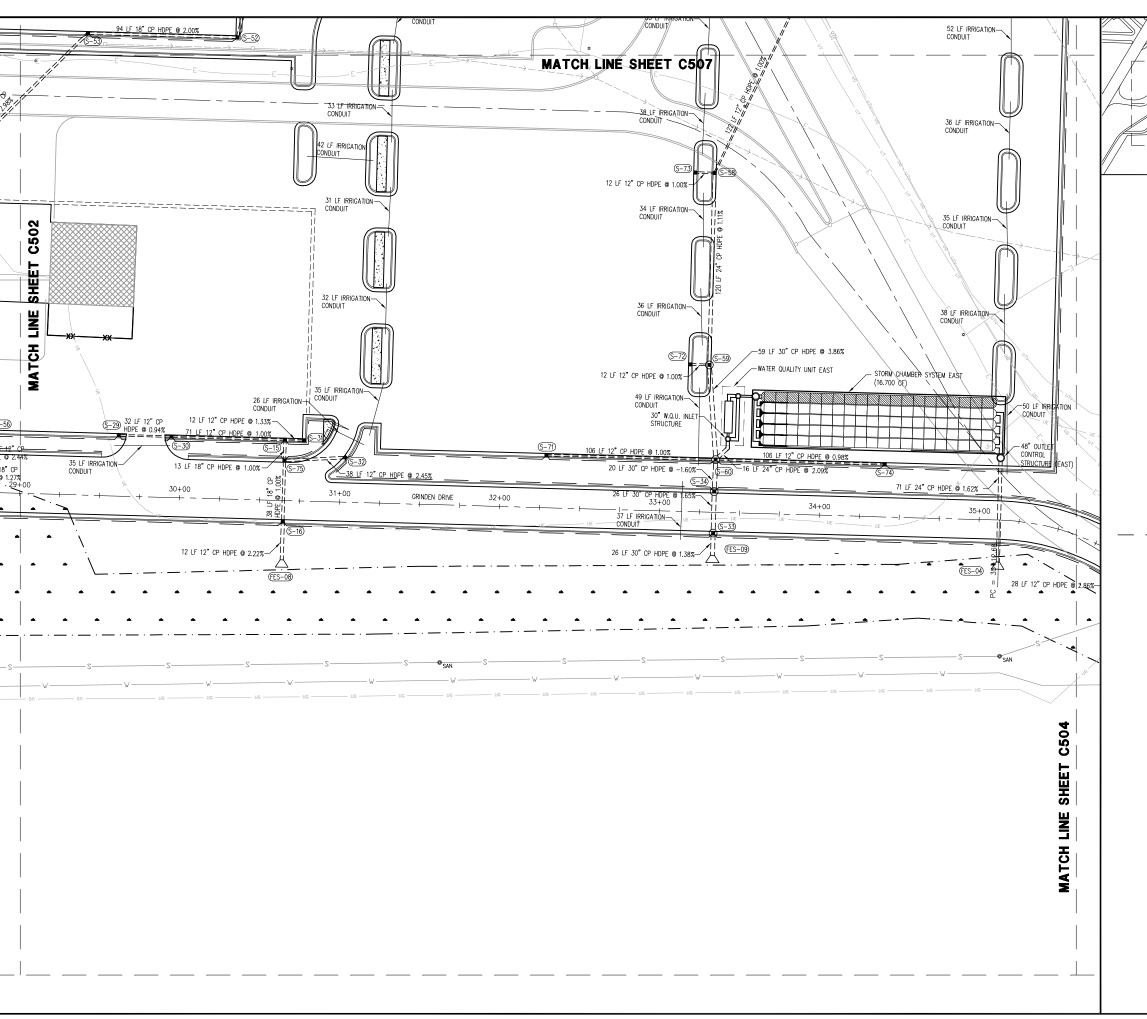
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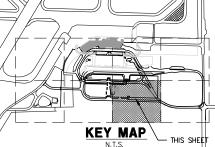
DRAINAGE PLAN (AREA 2)

2 OF 8

SHEET NUMBER

C502





NORTH

DRAINAGE LEGEND

CP HDPE PIPE

(S-73)

FLARED END SECTION

FLARED END SECTION NAME

4" PERF. PVC PIPE UNDERDRAIN

STRUCTURE NAME

STORM STRUCTURE (48" DIA.)

STORM STRUCTURE (>48" DIA.)



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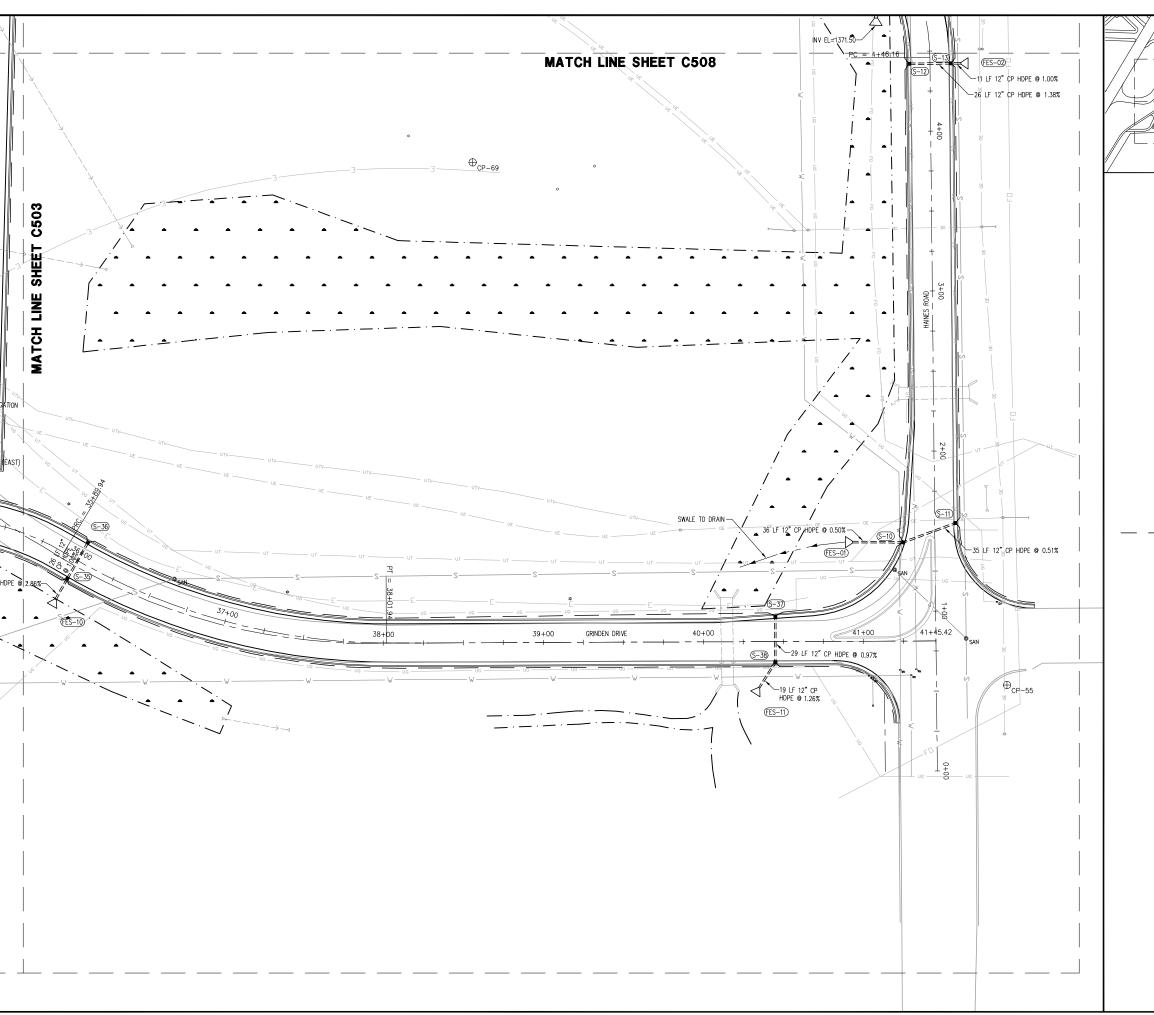
SHEET TITLE

DRAINAGE PLAN (AREA 3)

3 OF 8

SHEET NUMBER

C503







DRAINAGE LEGEND

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

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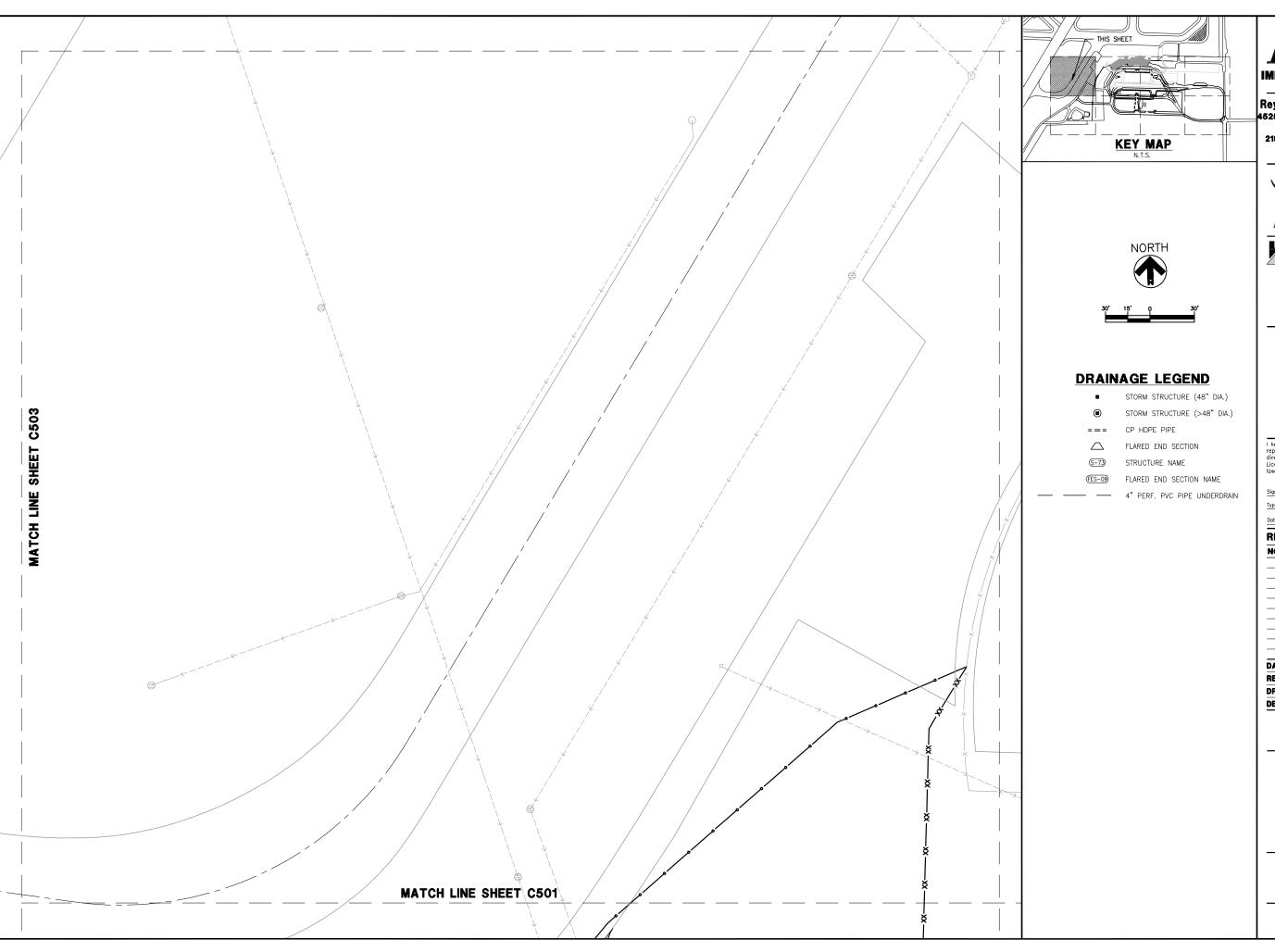
SHEET TITLE

DRAINAGE PLAN (AREA 4)

4 OF 8

SHEET NUMBER

C504



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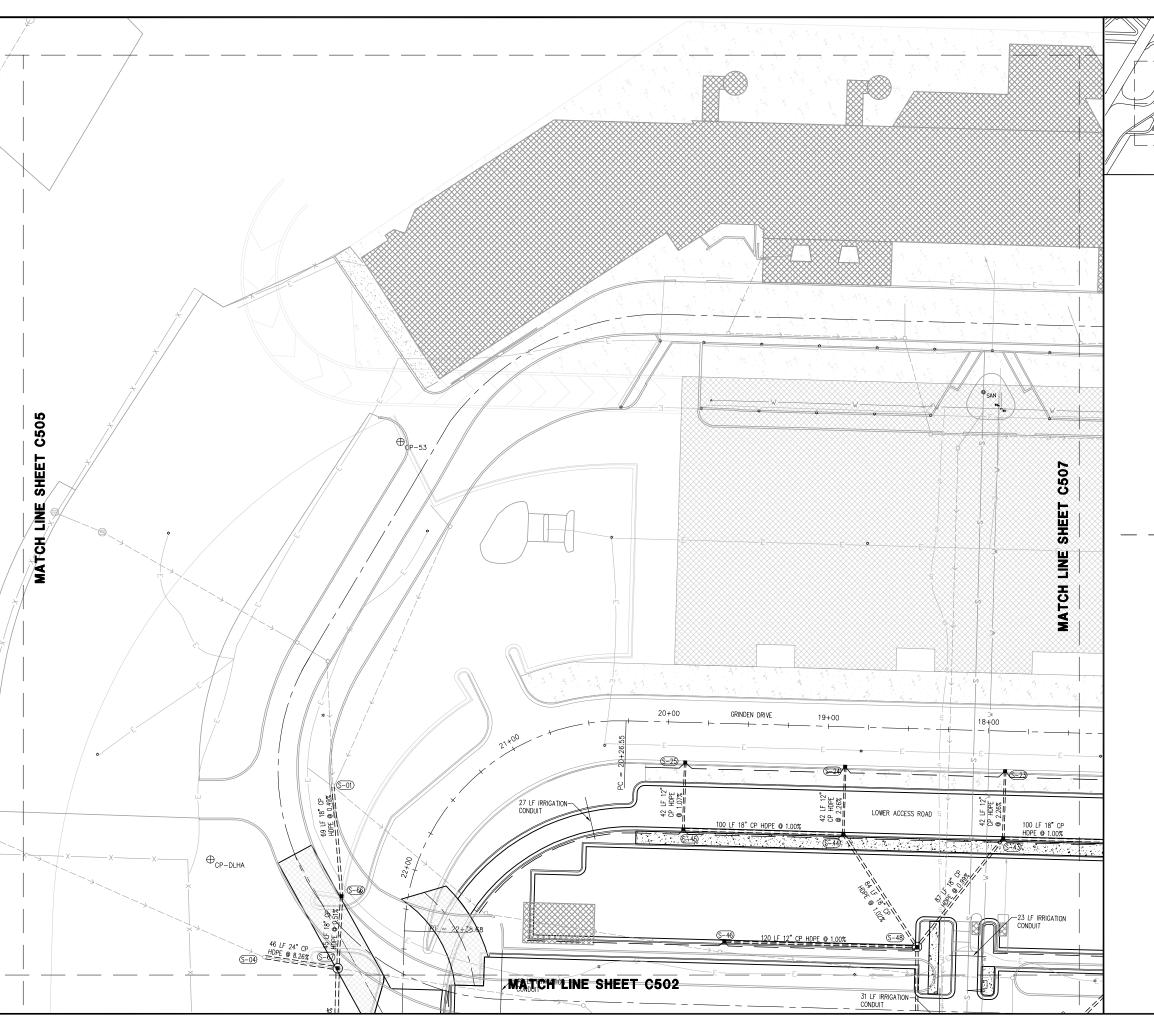
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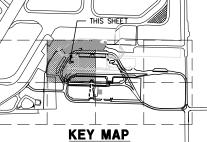
DRAINAGE **PLAN** (AREA 5)

5 OF 8

SHEET NUMBER

C505





NORTH

DRAINAGE LEGEND

CP HDPE PIPE

(S-73)

FLARED END SECTION

FLARED END SECTION NAME

4" PERF. PVC PIPE UNDERDRAIN

STRUCTURE NAME

STORM STRUCTURE (48" DIA.)

STORM STRUCTURE (>48" DIA.)



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& ASSOCIATES, P.A.

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Date 05/07/2009 Reg. No. 45009

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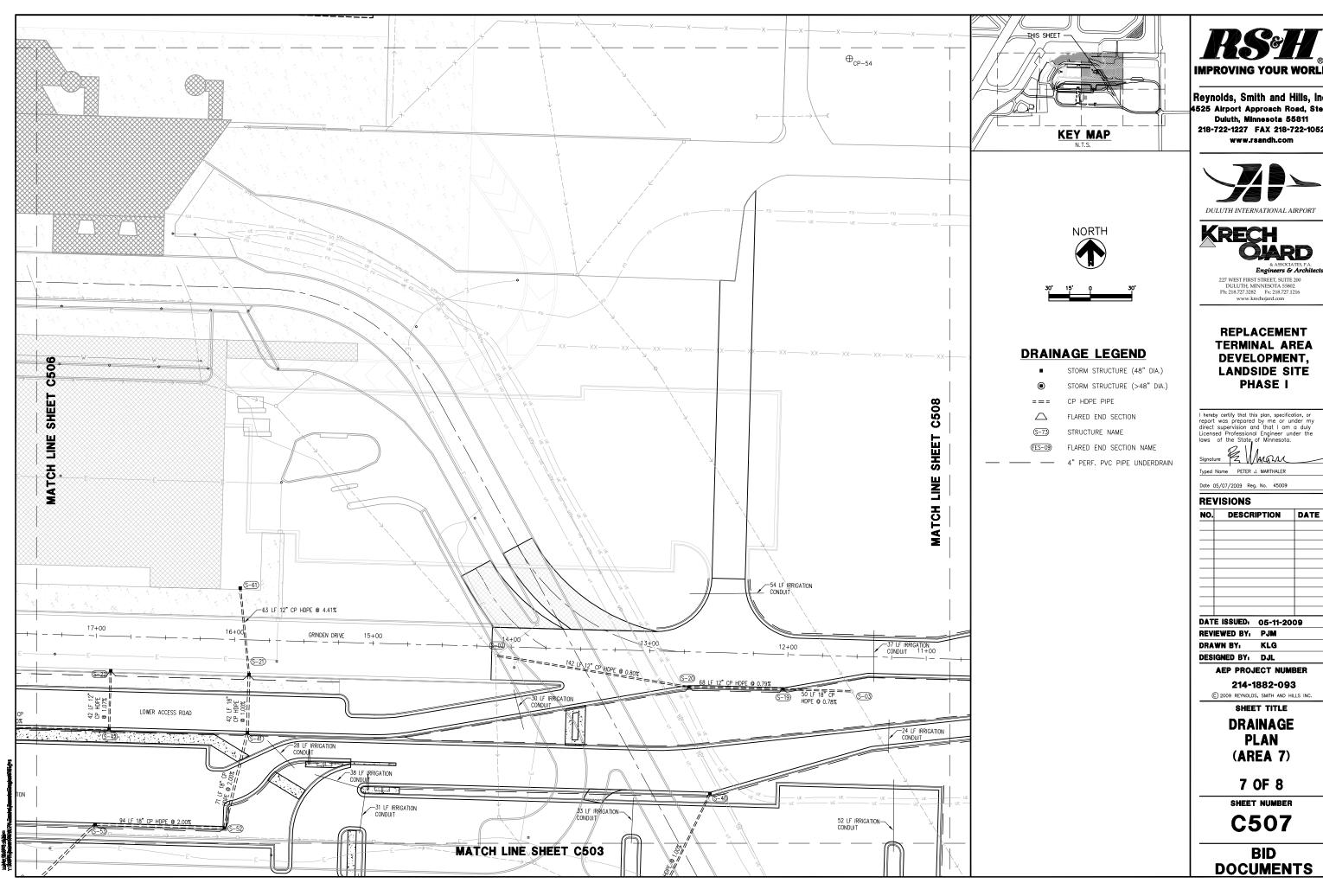
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DRAINAGE PLAN (AREA 6)

6 OF 8

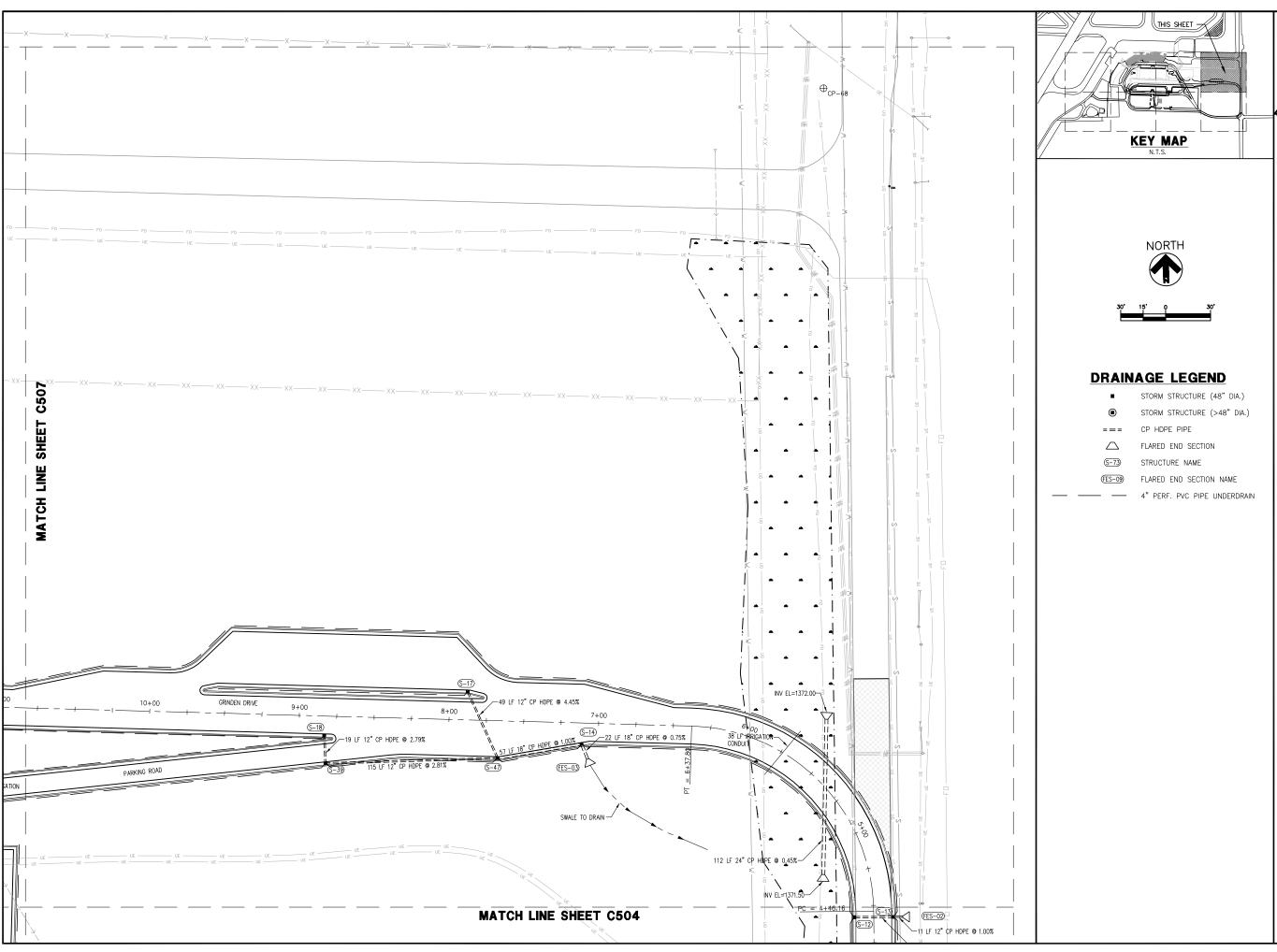
SHEET NUMBER

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SHEET TITLE

DRAINAGE PLAN (AREA 8)

8 OF 8

SHEET NUMBER

C508

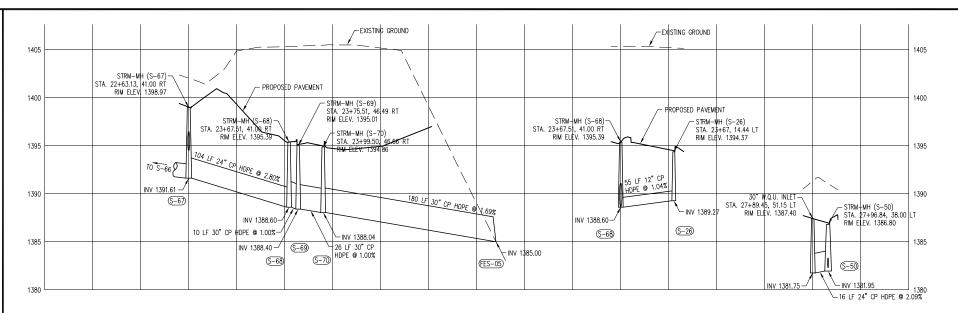
DRAINAGE STRUCT

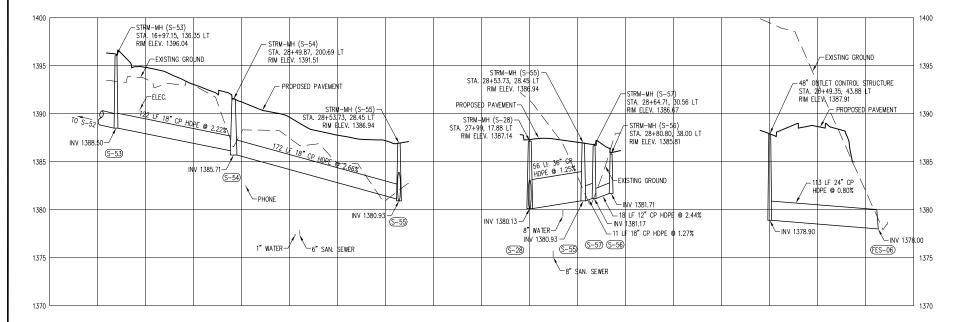
חע	AINAGE SIKU
STRM MH (S-26)	
Drainage Structure Design	i G
Casting STRM-3 STA. 23+67, 14.44 LT	0
•	Centerline Structu
RIM ELEV INV W	1394.
INV VV	1309.
STRM MH (S-27)	
Drainage Structure Design	60-4020
Casting STRM-3	
STA. 27+99, 13.00 RT	Centerline Structu
STA. 27+99, 13.00 RT	Centerline Castin
RIM ELEV	1387.
INV N INV S	1379.1 1379.0
IIIV 3	1379.
STRM MH (S-28)	
Drainage Structure Design	72-4020
Casting STRM-3 STA. 27+99, 17.88 LT	Contorling Structur
STA. 27+99, 17.88 LT	Centerline Structu Centerline Castir
RIM ELEV	1387.
INV N	1383.0
INV NE	1380.2
INV S	1380.
STRM MH (S-48)	72.4020
Drainage Structure Design Casting STRM-3	1 72-4020
STA. 18+41, 136.34 LT	Contorling Structur
STA. 18+41, 136.34 LT	Centerline Structu Centerline Castir
RIM ELEV	1395.8
INV W	1390.9
INV NW	1390.1
INV NE	1390.
INV S	1390.0
STRM MH (S-50) Drainage Structure Design	84-4020
Casting STRM-3	104-4020
STA. 27+96.84, 38.00 LT	Centerline Structu
STA. 27+96.84, 38.00 LT	Centerline Castin
RIM ELEV	1386.8
INV N	1382.4
INV W	1382.3
INV S	1382.3
INV NW	1381.9
CTDM MIL (C.54)	
STRM MH (S-51) Drainage Structure Design	ı G
Casting STRM-3	
STA. 26+80.84, 38 LT	Centerline Structu
RIM ELEV	1387.3
INV E	1383.2
STRM MH (S-53) Drainage Structure Design	
Casting STRM-3	
	Contaction - Co
STA. 16+97.15, 136.35 LT	Centerline Structu
RIM ELEV INV E	1396.0 1388.0
INV SW	1388.
STRM MH (S-54)	84-4020
Drainage Structure Design Casting STRM-3	1 04-4020
STA. 28+49.87, 200.69 LT	Contorline Ct
STA. 28+49.06, 199.57 LT	Centerline Structu Centerline Castir
RIM ELEV INV NW	1391.
INV NNE	1386. ⁻
INV NE	1385.
	1303.

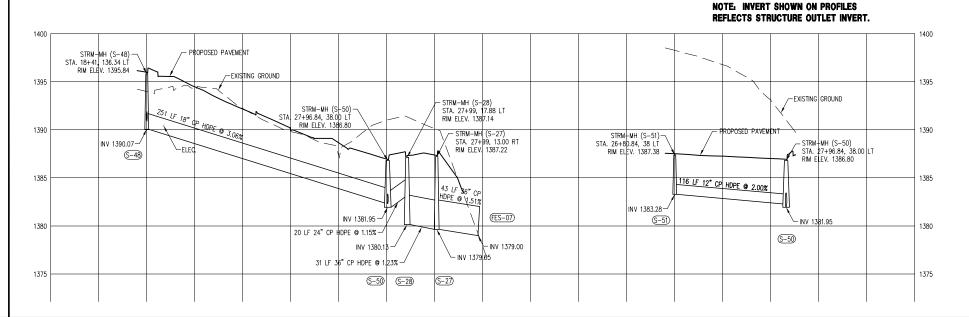
STRM MH (S-55)	
Drainage Structure Design	60-4020
Casting STRM-1	
STA. 28+53.73, 28.45 LT	Centerline Structure
STA. 28+53.73, 28.45 LT	Centerline Casting
RIM ELEV	1386.9
INV N	1381.1
INV NE	1381.03
INV SW	1380.9
STRM MH (S-56)	
Drainage Structure Design	G
Casting STRM-3	
STA. 28+80.80, 38.00 LT	Centerline Structure
RIM ELEV	1385.8
INV SW	1381.7
STRM MH (S-57)	
Drainage Structure Design	48-4020
Casting STRM-3	
STA. 28+64.71, 30.56 LT	Centerline Structure
STA. 28+64.71, 30.56 LT	Centerline Casting
RIM ELEV	1386.6
INV NE	1381.2
INV SW	1381.1
STRM MH (S-67)	
Drainage Structure Design	72-4020
Casting STRM-3	
STA. 22+63.13, 41.00 RT	Centerline Structure
STA. 22+63.13, 41.00 RT	Centerline Casting
RIM ELEV	1398.9
INV N	1391.7
INV W	1394.4
INV E	1394.3
INV S	1391.6
STRM MH (S-68)	
Drainage Structure Design	60-4020
Casting STRM-3	
STA. 23+67.51, 41.00 RT	Centerline Structure
STA. 23+67.51, 41.00 RT	Centerline Casting
RIM ELEV	1395.3
INV N	1388.7
INV E	1388.7
INV SW	1388.6
STRM MH (S-69)	
STRM MH (S-69) Drainage Structure Design	60-4020
Drainage Structure Design Casting STRM-3	60-4020
Drainage Structure Design Casting STRM-3 STA. 23+75.51, 46.49 RT	Centerline Structure
Drainage Structure Design Casting STRM-3	Centerline Structure
Drainage Structure Design Casting STRM-3 STA. 23+75.51, 46.49 RT	Centerline Structure Centerline Castine
Drainage Structure Design Casting STRM-3 STA. 23+75.51, 46.49 RT STA. 23+75.51, 46.49 RT	Centerline Structure Centerline Casting
Drainage Structure Design Casting STRM-3 STA. 23+75.51, 46.49 RT STA. 23+75.51, 46.49 RT RIM ELEV	Centerline Structure Centerline Casting 1395.0 1388.5
Drainage Structure Design Casting STRM-3 STA. 23+75.51, 46.49 RT STA. 23+75.51, 46.49 RT RIM ELEV INV NE	Centerline Structure Centerline Casting 1395.0 1388.5
Drainage Structure Design Casting STRM-3 STA. 23+75.51, 46.49 RT STA. 23+75.51, 46.49 RT RIM ELEV INV NE INV S	Centerline Structure Centerline Casting 1395.0 1388.4
Drainage Structure Design Casting STRM-3 STA. 23+75.51, 46.49 RT STA. 23+75.51, 46.49 RT RIM ELEV INV NE INV S STRM MH (S-70)	Centerline Structure Centerline Casting 1395.0 1388.4
Drainage Structure Design Casting STRM-3 STA. 23+75.51, 46.49 RT STA. 23+75.51, 46.49 RT RIM ELEV INV NE INV S STRM MH (S-70) Drainage Structure Design	Centerline Structure Centerline Casting 1395.0 1388.4 60-4020
Drainage Structure Design Casting STRM-3 STA. 23+75.51, 46.49 RT STA. 23+75.51, 46.49 RT RIM ELEV INV NE INV S STRM MH (S-70) Drainage Structure Design Casting STRM-3	Centerline Structure Centerline Casting 1395.0 1388.4 1388.4 60-4020 Centerline Structure
Drainage Structure Design Casting STRM-3 STA. 23+75.51, 46.49 RT STA. 23+75.51, 46.49 RT RIM ELEV INV NE INV S STRM MH (S-70) Drainage Structure Design Casting STRM-3 STA. 23+99.50, 46.66 RT	Centerline Structure Centerline Casting 1395.0 1388.4 1388.4 60-4020 Centerline Structure Centerline Casting
Drainage Structure Design Casting STRM-3 STA. 23+75.51, 46.49 RT STA. 23+75.51, 46.49 RT RIM ELEV INV NE INV S STRM MH (S-70) Drainage Structure Design Casting STRM-3 STA. 23+99.50, 46.66 RT STA. 23+99.50, 46.66 RT	Centerline Structure Centerline Casting 1395.0 1388.4

VERTICAL SCALE

1385.71









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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 under the laws of the State of Minnesota.

Signature Z. WARRA Typed Name PETER J. MARTHALER

Date 05/07/2009 Reg. No. 45009

REVISIONS

REVISIONS		
NO.	DESCRIPTION	DATE
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DATI	E IQQIIEN. AE-44-04	200

DATE ISSUED: 05-11-2009 REVIEWED BY: PJM

DRAWN BY: DESIGNED BY: DJL

AEP PROJECT NUMBER

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SHEET TITLE DRAINAGE

PROFILES (AREA 2)

1 OF 6 SHEET NUMBER

C509

BID **DOCUMENTS**

INV S

DRAINAGE STRUCTURE TABLE - C503

Drainage Structure Desi	gn 48-4020
Casting STRM-3	
STA. 30+65, 38.00 LT	Centerline Structure
STA. 30+65, 38.00 LT	Centerline Casting
RIM ELEV	1385.88
INV W	1380.61
INV E	1380.61
INV S	1380.51

STRM MH (S-16)	
Drainage Structure Design 48-4020	
Casting STRM-3	
STA. 30+65, 13.00 RT	Centerline Structure
STA. 30+65, 13.00 RT	Centerline Casting
RIM ELEV	1386.54
INV N	1379.90
INV S	1379.80

STRM MH (S-29)	
Drainage Structure Design G	
Centerline Structure	
1385.82	
1381.72	

STRM MH (S-30) Drainage Structure Design G	
STA. 29+94, 38.00 LT	Centerline Structure
RIM ELEV	1385.92
INV W	1381.42
INV E	1381.32

STRM MH (S-31)	
Drainage Structure Design G	
Casting STRM-3	
STA. 30+76.80, 38.00 LT	Centerline Structure
RIM ELEV	1385.81
INV W	1380.77

STRM MH (S-32)	
Drainage Structure Design	gn G
Casting STRM-3	
STA. 31+03, 27.93 LT	Centerline Structure
RIM ELEV	1386.41
INV W	1381.31
STRM MH (S-33)	

311(W WIT (3-33)	
Drainage Structure Design	n 60-4020
Casting STRM-3	
STA. 33+34, 13.00 RT	Centerline Structure
STA. 33+34, 13.00 RT	Centerline Casting
RIM ELEV	1385.88
INV N	1379.46
INV S	1379.36

STRM MH (S-34)	
Drainage Structure Design 60-4020	
Casting STRM-3	
STA. 33+34, 13.01 LT	Centerline Structure
STA. 33+34, 13.01 LT	Centerline Casting
RIM ELEV	1385.88
INV N	1381.25
INV S	1379.89
STDM MH (S 40)	
STRM MH (S-40)	
Drainage Structure Design G	

INV S	1379.89
STRM MH (S-40)	
Drainage Structure Design	G
Casting STRM-3	
STA. 12+53.61, 102.00 LT	Centerline Structure
RIM ELEV	1390.54
INV SW	1385.44

STRM MH (S-58)	
Drainage Structure Design 48-4020	
Casting STRM-3	
STA. 33+28.80, 211.98 LT	Centerline Structure
STA. 33+28.80, 211.98 LT	Centerline Casting
RIM ELEV	1389.26
INV W	1385.04
INV NE	1384.22
INV S	1384.12
STRM MH (S-59)	

Drainage Structure Design 60-4020		
Casting STRM-3		
STA. 33+28.80, 91.98 LT	Centerline Structure	
STA. 33+28.80, 91.98 LT	Centerline Casting	
RIM ELEV	1386.96	
INV W	1382.79	
INV N	1382.79	
INV S	1382.69	

STRM MH (S-60)		
rainage Structure Design 84-4020		
Casting STRM-3		
STA. 33+34.30, 32.94 LT	Centerline Structure	
STA. 33+34.30, 32.94 LT	Centerline Casting	
RIM ELEV	1385.56	
INV N	1380.30	
INV W	1380.4°	
INV E	1380.4	
INV S	1380.93	
INV NE	1380.20	
STRM MH (S-71)		
Drainage Structure Design	ı G	
Casting STRM-3		
STA. 32+28.55, 32.91 LT	Centerline Structure	
RIM ELEV	1385.57	

1381.47

Centerline Casting

1386.30

1380.38

1380.38 1380.28

INV E

STRM MH (S-72)

STA. 30+65, 25.00 LT

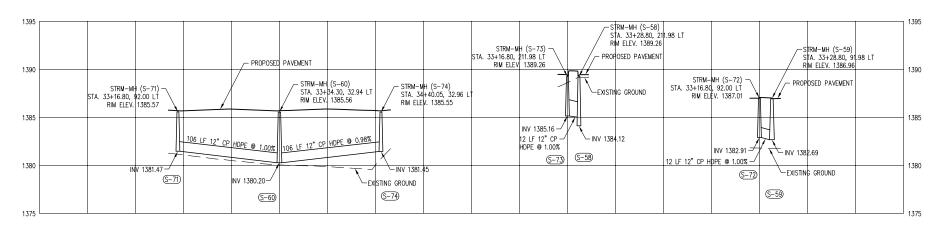
RIM ELEV

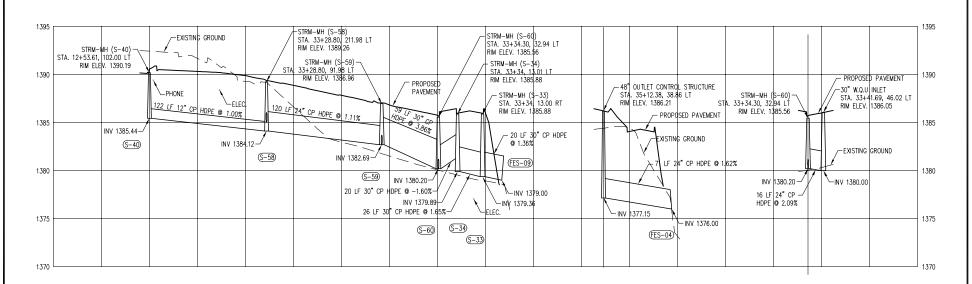
INV N

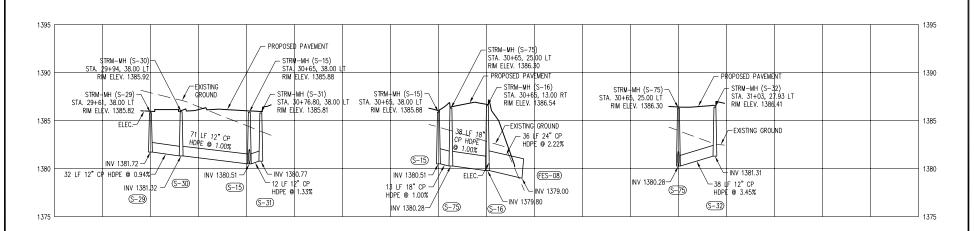
INV E

INV S

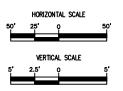
	Drainage Structure Design	G	
	Casting STRM-3		
	STA. 33+16.80, 92.00 LT	Centerline Structure	
	RIM ELEV	1387.01	
1	INV E	1382.91	
4			
1	STRM MH (S-73)		
4	Drainage Structure Design	G	
	Casting STRM-3		
	STA. 33+16.80, 211.98 LT	Centerline Structure	
1	RIM ELEV	1389.26	
4	INV E	1385.16	
1			
1	STRM MH (S-74)		
	Drainage Structure Design G		
	Casting STRM-3		
	STA. 34+40.05, 32.96 LT	Centerline Structure	
	RIM ELEV	1385.55	
	INV W	1381.45	
	STRM MH (S-75)		
	Drainage Structure Design 48-4020		
<u> </u>	Casting STRM-3		
	STA. 30+65, 25.00 LT	Centerline Structure	







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REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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 under the laws of the State of Minnesota.

Signature Z WARGAM

Typed Name PETER J. MARTHALER

Date 05/07/2009 Reg. No. 45009

REVISIONS

NO.	DESCRIPTION	DATE
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-+		
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DATE ISSUED: 05-11-2009
REVIEWED BY: PJM

DRAWN BY: KLG
DESIGNED BY: DJL

AEP PROJECT NUMBER

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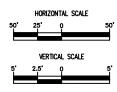
DRAINAGE PROFILES (AREA 3)

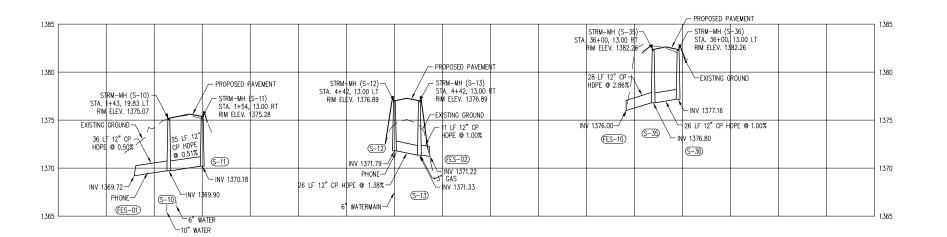
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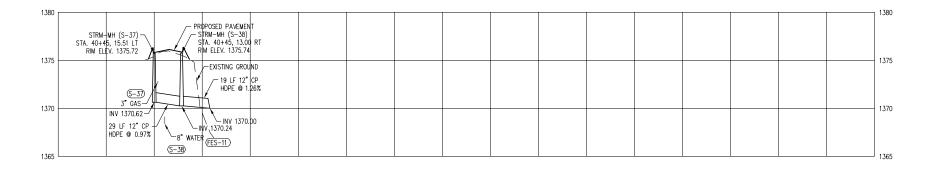
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STRM MH (S-10) Drainage Structure Design	gn G
Casting STRM-3	j
STA. 1+43, 19.83 LT	Contarling Structure
RIM ELEV	Centerline Structure
	1375.0
INV NE	1370.0
INV W	1369.9
STRM MH (S-11)	
Drainage Structure Desig	gn G
Casting STRM-3	
STA. 1+54, 13.00 RT	Centerline Structure
RIM ELEV	1375.2
INV SW	1370.1
STRM MH (S-12)	
Drainage Structure Desig	gn G
Casting STRM-3	
STA. 4+42, 13.00 LT	Centerline Structure
RIM ELEV	1376.8
INV E	1371.79
	1371.7
STRM MH (S-13)	
Drainage Structure Desig	gn 48-4020
Casting STRM-3	
STA. 4+42, 13.00 RT	Centerline Structure
STA. 4+42, 13.00 RT	Centerline Casting
RIM ELEV	1376.8
INV W	1371.4
INV E	1371.3
STRM MH (S-35)	
Drainage Structure Desig	gn 48-4020
Casting STRM-3	
STA. 36+00, 13.00 RT	Centerline Structure
STA. 36+00, 13.00 RT	Centerline Casting
RIM ELEV	1382.20
INV NE	1376.9
INV SW	1376.8
STRM MH (S-36)	
Drainage Structure Desig	gn G
Casting STRM-3	
STA. 36+00, 13.00 LT	Centerline Structure
RIM ELEV	1382.2
INV SW	1377.1
	153111
STRM MH (S-37)	
Drainage Structure Desig	gn G
Casting STRM-3	+
STA. 40+45, 15.51 LT	Centerline Structure
RIM ELEV	1375.7
INV S	1370.6
STRM MH (S-38)	
Drainage Structure Desig	gn 48-4020
Casting STRM-3	
STA. 40+45, 13.00 RT	Centerline Structure
STA. 40+45, 13.00 RT	Centerline Castin
RIM ELEV	1375.7
INV N	1370 3
INV N INV S	1370.3







NOTE: INVERT SHOWN ON PROFILES REFLECTS STRUCTURE OUTLET INVERT.



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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 under the laws of the State of Minnesota.

Typed Name PETER J. MARTHALER

Date 05/07/2009 Reg. No. 45009

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REVISIONS		
NO.	DESCRIPTION	DATE
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DRAWN BY: DESIGNED BY: DJL

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DRAINAGE **PROFILES** (AREA 4)

3 OF 6

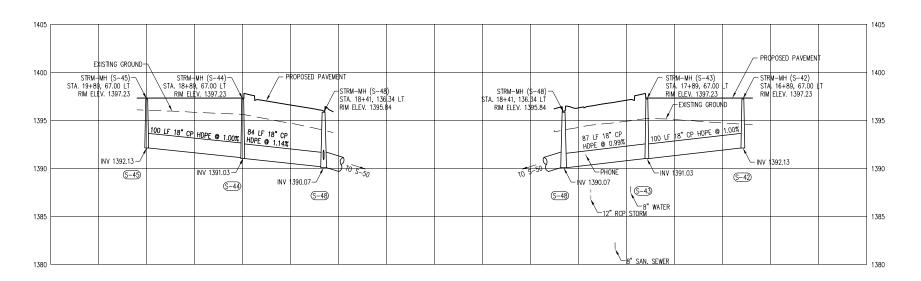
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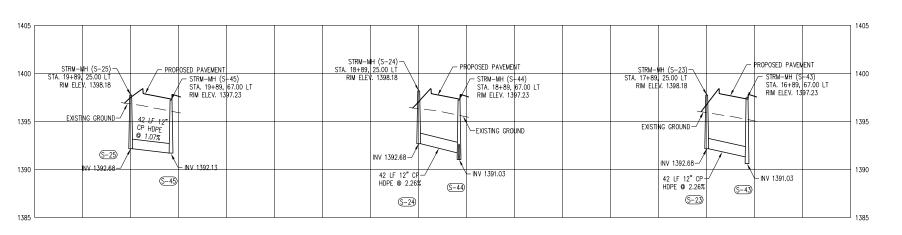
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STRM MH (S-01) EXISTING	
STA. 21+76.94, 67.87 RT	Centerline Structu
RIM ELEV	1396.
INV NW	1393.
INV N	1392.
INV NE	1392.
INV SE	1392. 1392.
INV 5	1392.
STRM MH (S-04) EXISTING	.
STA. 22+57.37, 86.91 RT	Centerline Structu
RIM ELEV	1403.
INV W	1398.
INV E	1398.
STRM MH (S-23)	
Drainage Structure Design	1 48-4020
Casting STRM-3	
STA. 17+89, 25.00 LT	Centerline Structu
STA. 17+89, 25.00 LT	Centerline Casti
RIM ELEV	1398.
INV S	1392.
STRM MH (S-24)	
Drainage Structure Design	48-4020
Casting STRM-3	
STA. 18+89, 25.00 LT	Centerline Structu
STA. 18+89, 25.00 LT	Centerline Casti
RIM ELEV	1398.
INV S	1392.
	1
STRM MH (S-25)	
Drainage Structure Design	48-4020
Drainage Structure Desigr Casting STRM-3	
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT	Centerline Structu
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT	Centerline Structu Centerline Casti
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV	Centerline Structu Centerline Casti 1398.
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT	Centerline Structu Centerline Casti 1398.
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S	Centerline Structu Centerline Casti 1398.
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV	Centerline Structu Centerline Casti 1398.
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43)	Centerline Structu Centerline Casti 1398.
Drainage Structure Design Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Design	Centerline Structu Centerline Casti 1398. 1392.
Drainage Structure Design Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Design Casting STRM-3	Centerline Structu Centerline Casti 1398. 1392.
Drainage Structure Design Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Design Casting STRM-3 STA. 17+89, 67.00 LT	Centerline Structu Centerline Casti 1398. 1392. 48-4020 Centerline Structu Centerline Casti
Drainage Structure Design Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Design Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT	Centerline Structu Centerline Casti 1398. 1392. 48-4020 Centerline Structu Centerline Casti 1397.
Drainage Structure Design Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Design Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV	Centerline Structu Centerline Casti 1398. 1392. 48-4020 Centerline Structu Centerline Casti 1397. 1391.
Drainage Structure Design Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Design Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N	Centerline Structu Centerline Casti 1398. 1392. 48-4020 Centerline Structu Centerline Casti 1397. 1391.
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Desigr Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N INV E INV SW	Centerline Structu Centerline Casti 1398. 1392. 48-4020 Centerline Structu Centerline Casti 1397. 1391.
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Desigr Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N INV E INV SW STRM MH (S-44)	Centerline Structu Centerline Casti 1398. 1392. 48-4020 Centerline Structu Centerline Casti 1397. 1391. 1391.
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Desigr Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N INV E INV SW STRM MH (S-44) Drainage Structure Desigr	Centerline Structu Centerline Casti 1398. 1392. 48-4020 Centerline Structu Centerline Casti 1397. 1391. 1391.
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Desigr Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N INV E INV SW STRM MH (S-44) Drainage Structure Desigr Casting STRM-3	Centerline Structu Centerline Casti 1398. 1392. 48-4020 Centerline Structu Centerline Casti 1397. 1391. 1391.
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Desigr Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N INV S INV S STRM MH (S-44) Drainage Structure Desigr Casting STRM-3 STA. 18+89, 67.00 LT	Centerline Structu Centerline Casti 1398. 1392. 148-4020 Centerline Structu Centerline Casti 1397. 1391. 1391. 1391.
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Desigr Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N INV E INV SW STRM MH (S-44) Drainage Structure Desigr Casting STRM-3 STA. 18+89, 67.00 LT STA. 18+89, 67.00 LT	Centerline Structu Centerline Casti 1398. 1392. 148-4020 Centerline Structu Centerline Casti 1397. 1391. 1391. 1391. 148-4020 Centerline Structu Centerline Casti
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Desigr Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N INV S STRM MH (S-44) Drainage Structure Desigr Casting STRM-3 STA. 18+89, 67.00 LT STA. 18+89, 67.00 LT STA. 18+89, 67.00 LT	Centerline Structu Centerline Casti 1398. 1392. 148-4020 Centerline Structu Centerline Casti 1397. 1391. 1391. 1391. 48-4020 Centerline Structu Centerline Casti
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Desigr Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N INV SW STRM MH (S-44) Drainage Structure Desigr Casting STRM-3 STA. 18+89, 67.00 LT STA. 18+89, 67.00 LT STA. 18+89, 67.00 LT	Centerline Structu Centerline Casti 1398. 1392. 148-4020 Centerline Structu Centerline Casti 1397. 1391. 1391. 148-4020 Centerline Structu Centerline Casti 1397. 1397.
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Desigr Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N INV E INV SW STRM MH (S-44) Drainage Structure Desigr Casting STRM-3 STA. 18+89, 67.00 LT STA. 18+89, 67.00 LT STA. 18+89, 67.00 LT STA. 18+89, 67.00 LT RIM ELEV INV N INV W	Centerline Structu Centerline Casti 1398. 1392. 148-4020 Centerline Structu Centerline Casti 1397. 1391. 1391. Centerline Structu Centerline Casti 1397. 1391. 1397.
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Desigr Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N INV SW STRM MH (S-44) Drainage Structure Desigr Casting STRM-3 STA. 18+89, 67.00 LT STA. 18+89, 67.00 LT STA. 18+89, 67.00 LT	Centerline Structu Centerline Casti 1398. 1392. 148-4020 Centerline Structu Centerline Casti 1397. 1391. 1391. Centerline Structu Centerline Casti 1397. 1391. 1397. 1397.
Drainage Structure Design Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Design Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N INV E INV SW STRM MH (S-44) Drainage Structure Design Casting STRM-3 STA. 18+89, 67.00 LT STA. 18+89, 67.00 LT STA. 18+89, 67.00 LT STA. 18+89, 67.00 LT RIM ELEV INV N INV W INV SE	Centerline Structu Centerline Casti 1398. 1392. 148-4020 Centerline Structu Centerline Casti 1397. 1391. 1391. Centerline Structu Centerline Casti 1397. 1391. 1397. 1397.
Drainage Structure Design Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Design Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N INV E INV SW STRM MH (S-44) Drainage Structure Design Casting STRM-3 STA. 18+89, 67.00 LT	Centerline Structu Centerline Casti 1398. 1392. 48-4020 Centerline Structu Centerline Casti 1397. 1391. 1391. Centerline Structu Centerline Casti 1397. 1391. 1391. 1391.
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Desigr Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N INV E INV SW STRM MH (S-44) Drainage Structure Desigr Casting STRM-3 STA. 18+89, 67.00 LT	Centerline Structu Centerline Casti 1398. 1392. 48-4020 Centerline Structu Centerline Casti 1397. 1391. 1391. Centerline Structu Centerline Casti 1397. 1391. 1391. 1391.
Drainage Structure Desigr Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Desigr Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N INV E INV SW STRM MH (S-44) Drainage Structure Desigr Casting STRM-3 STA. 18+89, 67.00 LT	Centerline Structu Centerline Casti 1398. 1392. 148-4020 Centerline Structu Centerline Casti 1397. 1391. 1391. Centerline Structu Centerline Casti 1397. 1391. 1391. 1391.
Drainage Structure Design Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Design Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N INV E INV SW STRM MH (S-44) Drainage Structure Design Casting STRM-3 STA. 18+89, 67.00 LT	Centerline Structu Centerline Casti 1398. 1392. 148-4020 Centerline Structu Centerline Casti 1397. 1391. 1391. 1391. 1391. 1391. 1391. 1391.
Drainage Structure Design Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Design Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT STA. 18+89, 67.00 LT STA. 19+89, 67.00 LT RIM ELEV STRM MH (S-45) Drainage Structure Design Casting STRM-3 STA. 19+89, 67.00 LT RIM ELEV	Centerline Structu Centerline Casti 1398. 1392. 148-4020 Centerline Structu Centerline Casti 1397. 1391. 1391. 1391. 1391. 1391. 1391. 1391. 1391.
Drainage Structure Design Casting STRM-3 STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT STA. 19+89, 25.00 LT RIM ELEV INV S STRM MH (S-43) Drainage Structure Design Casting STRM-3 STA. 17+89, 67.00 LT STA. 17+89, 67.00 LT RIM ELEV INV N INV E INV SW STRM MH (S-44) Drainage Structure Design Casting STRM-3 STA. 18+89, 67.00 LT	Centerline Structu Centerline Casti 1398. 1392. 48-4020 Centerline Structu Centerline Casti 1397. 1391. 1391. Centerline Structu Centerline Casti 1397. 1391. 1391. 1391.

STRM MH (S-46)	•
Drainage Structure Design	16
Casting STRM-3	
STA. 19+61.48, 136.35 LT	Centerline Structur
RIM ELEV	1396.2
INV S	1392.1
STRM MH (S-48)	
Drainage Structure Design	72-4020
Casting STRM-3	
STA. 18+41, 136.34 LT	Centerline Structur
STA. 18+41, 136.34 LT	Centerline Castin
RIM ELEV	1395.8
INV W	1390.9
INV NW	1390.1
INV NE	1390.1
INV S	1390.0
STRM MH (S-66)	
Drainage Structure Design	1 F
Casting STRM-3	
STA. 22+22.85, 40.99 RT	Centerline Structur
RIM ELEV	1400.8
INV N	1392.0
INV S	1391.9
STRM MH (S-67)	
Drainage Structure Design	72-4020
Casting STRM-3	
STA. 22+63.13, 41.00 RT	Centerline Structur
STA. 22+63.13, 41.00 RT	Centerline Castin
	1398.9
RIM ELEV	
RIM ELEV INV N	1391.7
	1391.7 1394.4
INV N	+

1405 STRM_MH (S-66) STR. 22+57.37] 86.91 RT STR. 22+57.37] 86.91	1405
STA 29-429.85 40.90 RT / PROPOSED PAVEMENT RIM ELLLY. 1405.17 / EXISTING GROUND	
31/1. 22142.00, T0.00 NT \ / / / ····· [····	
_ STRW+MH (S−46) STA_ 22+63.13, 41.00 RT STA_ 22+63.13, 41.00 RT STA_ 22+63.13, 41.00 RT	
1400 STA. 19+6i.48. 136.35 LT ELEC RIM ELEV. 1398.97 RIM ELEV. 1396.20	1400
PROPOSED STRM_MH (S-01)	
PROPOSED	
1705 69 /F 10° - 60 /	1395
120 LF 12* CP HOPE @ 1.00%	
INV 1392.10 INV 1391.61 INV 1391.61	
1390 (S-46) INV 1391.94 (S-67)	1390
— -INV 1890.07 G.ED G-67)	
<u>§-48</u>	
1385	1385





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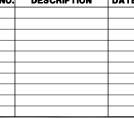
REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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 under the laws of the State of Minnesota.

Typed Name PETER J. MARTHALER

Date 05/07/2009 Reg. No. 45009

REVISIONS NO. DESCRIPTION DATE



DATE ISSUED: 05-04-2009 REVIEWED BY: PJM

DRAWN BY: DESIGNED BY: DJL

AEP PROJECT NUMBER

214-1882-093

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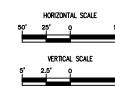
SHEET TITLE

DRAINAGE **PROFILES** (AREA 6)

4 OF 6

SHEET NUMBER

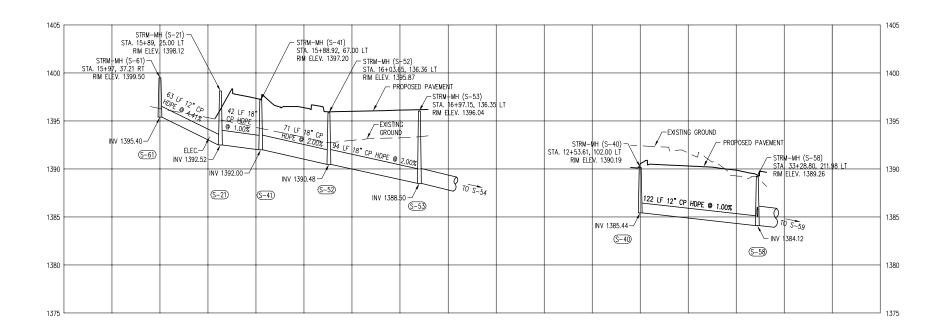
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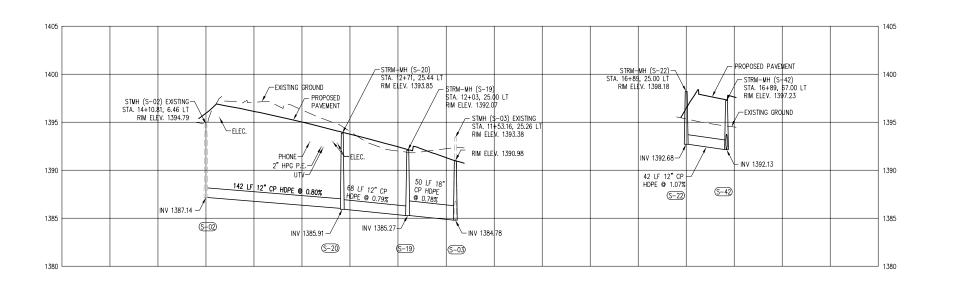


STRM MH (S-42)

STRM MH (S-02) EXISTING	
STA. 14+10.81, 6.46 LT	Centerline Structure
RIM ELEV (EXISTING)	1394.7
RIM ELEV (PROPOSED)	1395.9
INV NW	1387.2
INV NE	1387.7
INV SE	1387.1
STRM MH (S-03) EXISTING	
STA. 11+53.16, 25.26 LT	Centerline Structure
RIM ELEV (EXISTING)	1393.3
RIM ELEV (PROPOSED)	1390.9
INV NW	1384.8
INV W	1384.8
INV SE	
STRM MH (S-19)	
Drainage Structure Design	48-4020
Casting STRM-3	40-4020
STA. 12+03, 25.00 LT	Cantarlina Structur
STA. 12+03, 25.00 LT STA. 12+03, 25.00 LT	Centerline Structure Centerline Casting
,	1392.0
RIM ELEV INV W	
INV W	1385.3 1385.2
INV E	1385.2
STRM MH (S-20)	
Drainage Structure Design	F
Casting STRM-3	
STA. 12+71, 25.44 LT	Centerline Structure
RIM ELEV	1393.8
INV WNW	1386.0
INV E	1385.9
STRM MH (S-21)	
Drainage Structure Design	48-4020
Casting STRM-3	
STA. 15+89, 25.00 LT	Centerline Structure
STA. 15+89, 25.00 LT	Centerline Castin
RIM ELEV	1398.1
INV NW	1392.6
INV S	1392.5
STRM MH (S-22)	
Drainage Structure Design	48-4020
Casting STRM-3	
STA. 16+89, 25.00 LT	Centerline Structur
STA. 16+89, 25.00 LT	Centerline Castin
RIM ELEV	1398.1
INV S	1392.6
STRM MH (S-40)	
Drainage Structure Design	G
Casting STRM-3	
STA. 12+53.61, 102.00 LT	Centerline Structur
RIM ELEV	1390.5
INV SW	1385.4
STRM MH (S-41)	
Drainage Structure Design	48-4020
Casting STRM-3	
STA. 15+88.92, 67.00 LT	Centerline Structur
STA. 15+88.92, 67.00 LT	Centerline Castin
	1397.2
RIM ELEV	
RIM ELEV INV N	1392.1
INV N	
	1392. 1392.

Drainage Structure Design	G
Casting STRM-3	
STA. 16+89, 67.00 LT	Centerline Structure
RIM ELEV	1397.23
INV N	1392.23
INV W	1392.13
STRM MH (S-52)	
Drainage Structure Design	48-4020
Casting STRM-3	
STA. 16+03.65, 136.36 LT	Centerline Structure
STA. 16+03.65, 136.36 LT	Centerline Casting
RIM ELEV	1395.87
INV NE	1390.58
INV W	1390.48
CTDM MIL (C 50)	
STRM MH (S-53)	
Drainage Structure Design	F
, ,	F
Drainage Structure Design	
Drainage Structure Design Casting STRM-3	Centerline Structure
Drainage Structure Design Casting STRM-3 STA. 16+97.15, 136.35 LT	Centerline Structure
Drainage Structure Design Casting STRM-3 STA. 16+97.15, 136.35 LT RIM ELEV	Centerline Structure 1396.04 1388.60
Drainage Structure Design Casting STRM-3 STA. 16+97.15, 136.35 LT RIM ELEV INV E	Centerline Structure 1396.04 1388.60
Drainage Structure Design Casting STRM-3 STA. 16+97.15, 136.35 LT RIM ELEV INV E	Centerline Structure 1396.04 1388.60 1388.50
Drainage Structure Design Casting STRM-3 STA. 16+97.15, 136.35 LT RIM ELEV INV E INV SW STRM MH (S-61)	Centerline Structure 1396.04 1388.60 1388.50
Drainage Structure Design Casting STRM-3 STA. 16+97.15, 136.35 LT RIM ELEV INV E INV SW STRM MH (S-61) Drainage Structure Design	Centerline Structure 1396.04 1388.60 1388.50
Drainage Structure Design Casting STRM-3 STA. 16+97.15, 136.35 LT RIM ELEV INV E INV SW STRM MH (S-61) Drainage Structure Design Casting STRM-3	Centerline Structure 1396.04 1388.60 1388.50





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REPLACEMENT **TERMINAL AREA** DEVELOPMENT, LANDSIDE SITE PHASE I

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Signature

Typed Name PETER J. MARTHALER

Date 05/07/2009 Reg. No. 45009

REVISIONS

NO.	DESCRIPTION	DATE

DATE ISSUED: 05-11-2009 REVIEWED BY: PJM DRAWN BY:

DESIGNED BY: DJL **AEP PROJECT NUMBER**

214-1882-093

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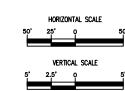
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DRAINAGE **PROFILES** (AREA 7)

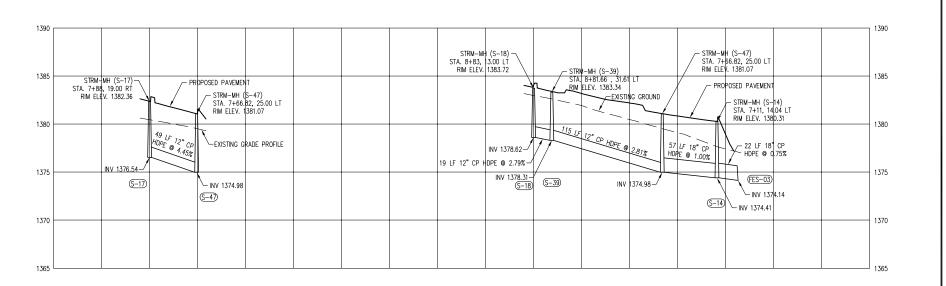
5 OF 6

SHEET NUMBER

C513



Drainage Structure Design	n 48-4020
Casting STRM-3	
STA. 7+11, 14.04 LT	Centerline Structur
STA. 7+11, 14.04 LT	Centerline Castin
RIM ELEV	1380.3
INV NW	1374.4
INV SW	1374.4
INV S	1374.3
STRM MH (S-17)	
Drainage Structure Design	n G
Casting STRM-3	<u> </u>
STA. 7+88, 19.00 RT	Contorling Structure
RIM ELEV	Centerline Structur
INV S	1382.3 1377.2
INV 3	13/1.2
STRM MH (S-18)	
Drainage Structure Design	n G
Casting STRM-3	<u>-</u>
STA. 8+83, 13.00 LT	Centerline Structur
RIM ELEV	1384.1
INV S	1379.0
IIIV 3	1379.0
STRM MH (S-39)	
Drainage Structure Design	n G
Casting STRM-3	
STA. 8+81.66 , 31.61 LT	Centerline Structur
RIM ELEV	1383.3
INV N	1378.4
INV NE	1378.3
STRM MH (S-47)	
Drainage Structure Design	n 48-4020
Casting STRM-3	11 40-4020
STA. 7+66.82, 25.00 LT	0
	Centerline Structur
STA. 7+66.82, 25.00 LT	Centerline Castin
RIM ELEV	1381.0
INV NE	1375.0
INV W	1375.0
INV E	1374.9



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NO.	DESCRIPTION	DATE
\perp		

DATE ISSUED: 05-11-2009

REVIEWED BY: PJM DRAWN BY: DESIGNED BY: DJL

AEP PROJECT NUMBER

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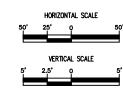
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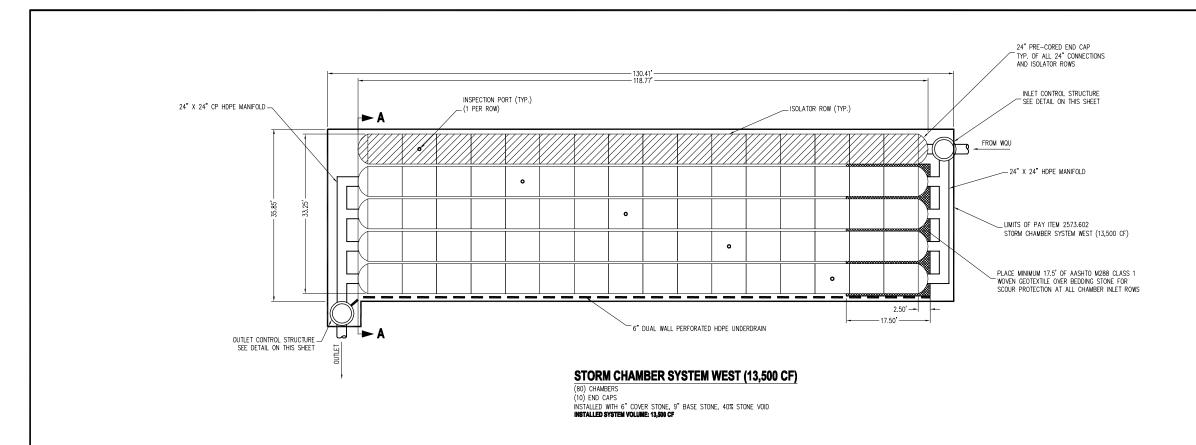
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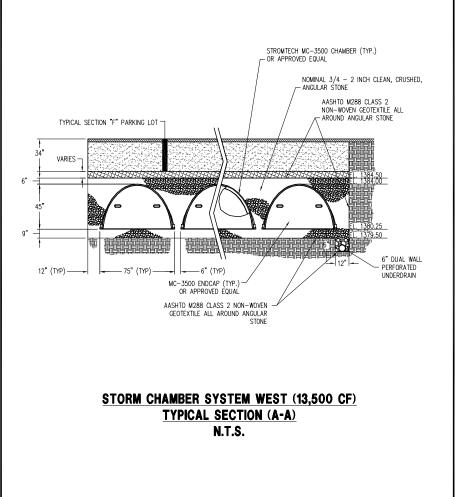
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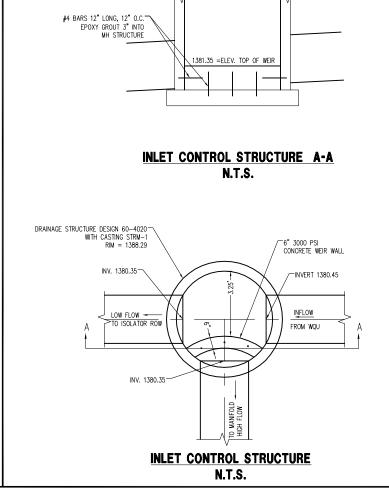
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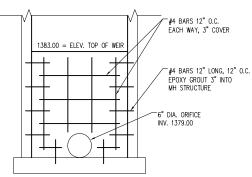
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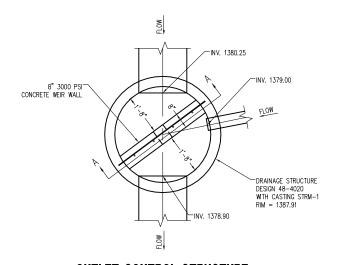








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Date 05/07/2009 Reg. No. 45009

REVISIONS		
NO.	DESCRIPTION	DATE
DAT	DATE ISSUED: 05-11-2009	
REV	IEWED BY: PJM	

DRAWN BY:

DESIGNED BY: STS

AEP PROJECT NUMBER

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STORM CHAMBER

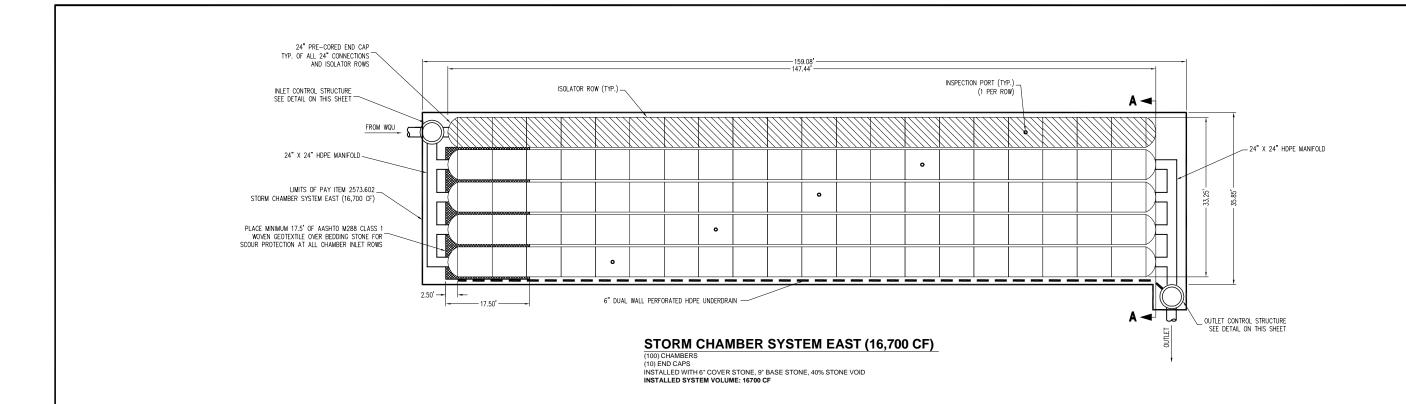
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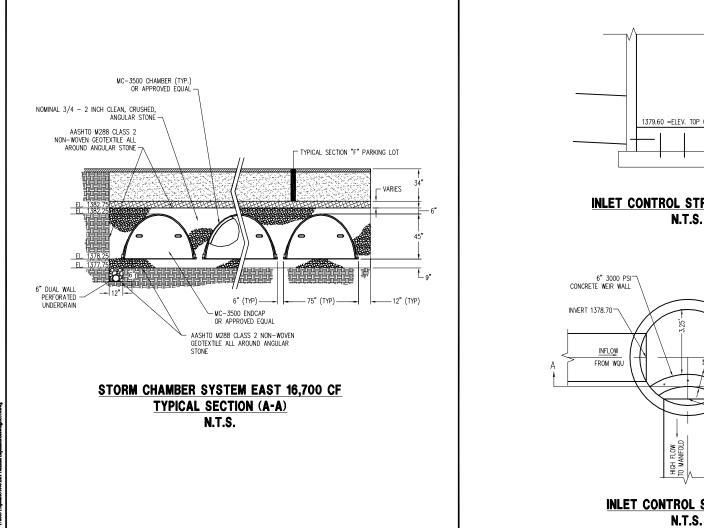
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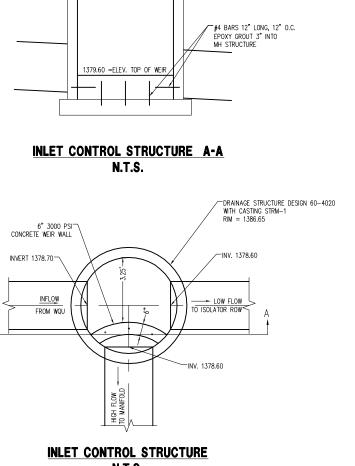
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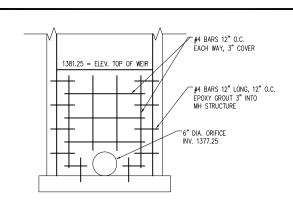
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#4 BARS 12" LONG, 12" O.C. EPOXY GROUT 3" INTO MH STRUCTURE

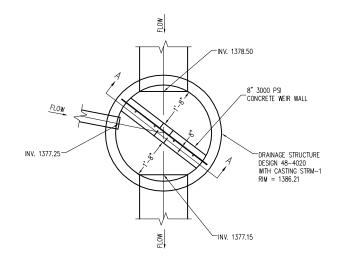








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E Waran Typed Name PETER J. MARTHALER

NO.	DESCRIPTION	DAT
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REVIEWED BY: PJM DRAWN BY:

DESIGNED BY: STS

AEP PROJECT NUMBER

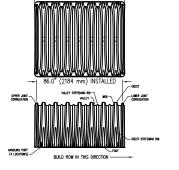
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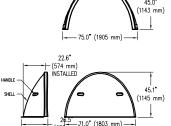
STORM CHAMBER SYSTEM EAST (16,700 CF)

SHEET NUMBER

C516



------ 90.0" (2286 mm) ---



NOMINAL MC-3500 CHAMBER SPECIFICATIONS

90" x 75" x 45" (2286 mm x 1905 mm x 1143 mm) SIZE $(L \times W \times H)$ CHAMBER STORAGE

110.0 ft³ (3.11 m³) 162.8 ft³ (4.61 m³) MINIMUM INSTALLED STORAGE WEIGHT 124 lbs. (56.2 kg)

NOMINAL MC-3500 END CAP SPECIFICATIONS

26.5" x 71" x 45" (673 mm x 1803 mm x 1143 mm 15.6 ft³ (0.44 m³) CHAMBER STORAGE MINIMUM INSTALLED STORAGE 43 lbs. (19.5 kg)



O/

WEIGHT



PART#	STUB	В	С	
MC3500TEPE12TN	12" (300 mm)	27.41" (696 mm)	N/A	
MC3500TEPE12B	12" (300 mm)	N/A	1.35" (34 mm)	
MC3500TEPE15TN	15" (375 mm)	24.59" (625 mm)	N/A	
MC3500TEPE15B	15" (375 mm)	N/A	1.50" (38 mm)	
MC3500TEPE18TN	18" (450 mm)	21.29" (541 mm)	N/A	
MC3500TEPE18B	18" (450 mm)	N/A	1.77" (45 mm)	
24" TOP STUB CORED ENDCAP NOT AVAILABLE				
MC3500TEPE24B	24" (600 mm)	N/A	2.06" (52 mm)	
NOTE: ALL DIMENSIONS ARE NOMINAL				

STORM CHAMBER TECHNICAL SPECIFICATIONS

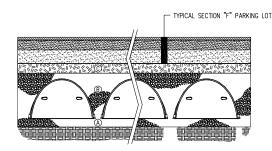
N.T.S.

ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

N	MATERIAL LOCATION	DESCRIPTION	MNDOT DESIGNATION(1)	COMPACTION/DENSITY REQUIREMENT
©	FILL MATERIAL FOR LAYER C STARTS FROM THE TOP OF THE EMBEDMENT STONE (B LAYER) TO THE BOTTOM OF THE SUBBASE.	SELECT GRANULAR BORROW, 7% MODIFIED.	3149.2B2	BEGIN COMPACTION AFTER 12" OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT TO A MIN. 95% STANDARD PROCTOR DENSITY (2), ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs. DYNAMIC FORCE NOT TO EXCEED 20,000 lbs.
®	EMBEDMENT STONE SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE (A LAYER) TO THE C LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 1 - 2 INCH	CA-1, CA-2, CA-3, CA-4	NO COMPACTION REQUIRED.
A	FOUNDATION STONE BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH	CA-1, CA-2, CA-3, CA-4	PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY(2).

1. THE LISTED MNDOT DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR,

2. AS AN ALTERNATE TO PROCTOR TESTING AND FIELD DENSITY MEASUREMENTS IN OPEN GRADED STONE, STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9"(229 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH AN APPROPRIATE COMPACTOR.



STORM CHAMBER SYSTEM ACCEPTABLE FILL N.T.S.

- COVER ENTIRE ROW WITH AASHTO M288 CLASS 2 NON-WOVEN GEOTEXTILE. MC-3500 - 13' WIDE STRIP MC-3500 ENDCAP 24" HDPE ACCESS PIPE REQUIRED. -2 LAYERS OF AASHTO M288 CLASS 1 WOVEN GEOTEXTILE USE FACTORY PRE-CORED END CAPS. BETWEEN FOUNDATION STONE AND CHAMBERS. MC-3500 - 8.25' WIDE STRIPS

ISOLATOR ROW PROFILE

N.T.S.

NYLOPLAST 2712AG INLINE DRAIN W/ STANDARD H-20 GRATE 8" CONCRETE (MNDOT 3A32) COLLAR EXTEND 12" (MIN.) AROUND DRAIN OR APPROVED EQUAL PAVEMENT - 4" SCHED 40 PVC STORM CHAMBER - 4" SCHED 40 PVC COUPLING - 4" SCHED 40 PVC 3/4 - 2 INCH CLEAN CRUSHED ANGULAR STONE CORE 4.5" Ø HOLE IN CHAMBER (4.5" HOLE SAW REQ'D) AASHTO M288 CLASS 2 NON-WOVEN GEOTEXTILE ANY OF (6) VALLEY - LOCATIONS CONNECTION DETAIL **INSPECTION PORT DETAIL**

N.T.S.

INSPECTION PORTS MAY BE CONNECTED THROUGH

1.0 GENERAL NOTES:

- 1.1 INSTALLING CONTRACTOR SHALL USE AND UNDERSTAND MANUFACTURE'S LATEST INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION.
- 1.2 CONTRACTOR SHALL ARRANGE A PRE-INSTALLATION CONSULTATION WITH
 MANUFACTURE'S REPRESENTATIVES TO ANSWER QUESTIONS OR ADDRESS COMMENTS ON THE CHAMBER SYSTEM AND INFORM THE INSTALLING CONTRACTOR OF THE MINIMUM INSTALLATION REQUIREMENTS BEFORE BEGINNING THE SYSTEM'S
- 1.3 THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION
 MATERIALS BEARING CAPACITIES TO THE DESIGN
- AASHTO M288 CLASS 2 NON-WOVEN GEOTEXTILE (FILTER FABRIC) MUST BE USED AS INDICATED IN THE PROJECT PLANS.
- 1.5 STONE PLACEMENT BETWEEN CHAMBERS ROWS AND AROUND PERIMETER MUST FOLLOW INSTRUCTIONS AS INDICATED IN THE MOST CURRENT VERSION OF THE MANUFACTURER'S INSTALLATION
- 1.6 BACKFILLING OVER THE CHAMBERS MUST FOLLOW REQUIREMENTS AS INDICATED IN THE MOST CURRENT VERSION OF THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING VEHICLES THAT EXCEED THE MANUFACTURER'S REQUIREMENTS FROM TRAVELING ACROSS OR PARKING OVER THE STORMWATER SYSTEM. TEMPORARY FENCING, WARNING TAPE AND APPROPRIATELY LOCATED SIGNS SHALL BE USED TO PREVENT UNAUTHORIZED VEHICLES FROM ENTERING SENSITIVE CONSTRUCTION AREAS.
- 1.8 THE CONTRACTOR MUST APPLY EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF SITE CONSTRUCTION PER THE EROSION AND SEDIMENT CONTROL PLAN.

- 2.0 GENERAL SPECIFICATIONS:
- CHAMBERS SHALL BE STORMTECH SC-3500 OR APPROVED EQUAL.
- 2.2 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418-05, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP)
 CORRUGATED WALL STORMWATER COLLECTION CHAMBERS"
- 2.3 CHAMBERS SHALL BE MADE FROM VIRGIN-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE
- 2.5 THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRED BRIDGE DESIGN SPECIFICATIONS AASHIO LARY BRIDGE DESIGN SPECIFICATIONS, SECTION 12:12 ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCE.
- IF CONTRACTOR PLANS TO USE A CHAMBER IN LIEU OF THAT SPECIFIED. THE CONTRACTOR SHALL SUBMIT (3 SETS) OF THE FOLLOWING TO THE ENGINEER FOR APPROVAL BEFORE ACCEPTANCE OF THE SUBSTITUTE:
 - A STRUCTURAL EVALUATION BY A REGISTERED STRUCTURAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12 ARE MET. THE 50-YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2418-05 MUST BE USED AS A PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
 - b. STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL CROSS SECTION IS BASED.



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REPLACEMENT **TERMINAL AREA** DEVELOPMENT. LANDSIDE SITE PHASE I

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E Whom Typed Name PETER J. MARTHALER

Date 05/07/2009 Reg. No. 45009

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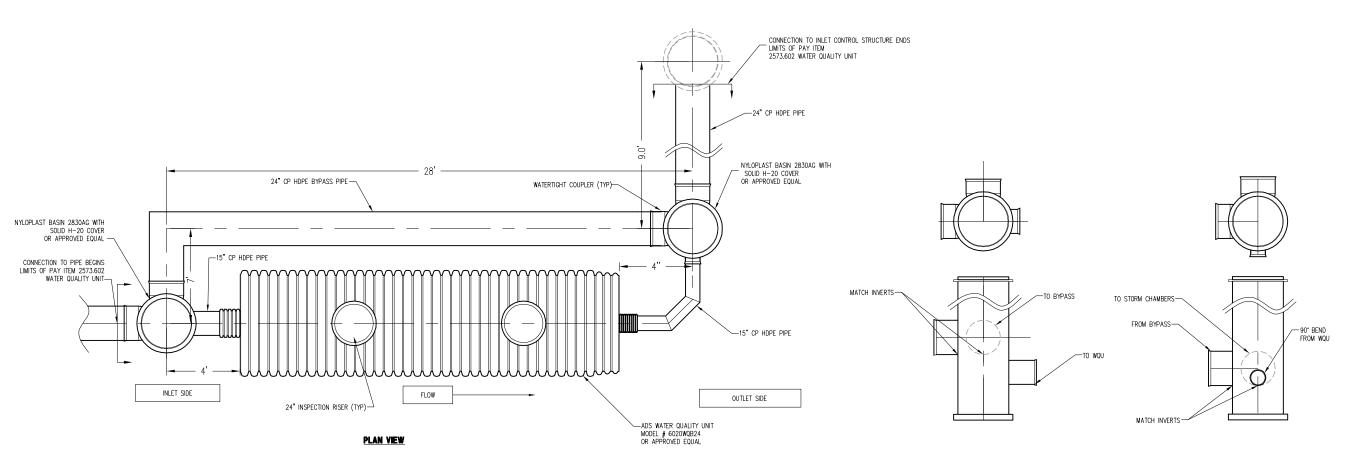
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STORM CHAMBER SYSTEM **DETAILS**

SHEET NUMBER

C517



24" HDPE ACCESS RISERS (FIELD EXTEND AS REQUIRED)
PLACE NYLOPLAST 2724AG INLINE DRAIN WITH SOLID H-20 COVER
- OR APPROVED EQUAL RIM 1387.40 -RIM 1387.69 -BYPASS
PIPE LOCATED
ON SIDE
OF PIPE -RIM 1387.95 -RIM 1388.25 INLET INVERT 1381.75-- OUTLET INVERT 1380.65 INVERT 1380.95-SUMP INVERT 1379.95-- SUMP INVERT 1379.65 20' PROFILE VIEW

> **WATER QUALITY UNIT (WEST)** N.T.S.



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OUTLET STRUCTURE

NYLOPLAST BASIN

INLET STRUCTURE NYLOPLAST BASIN

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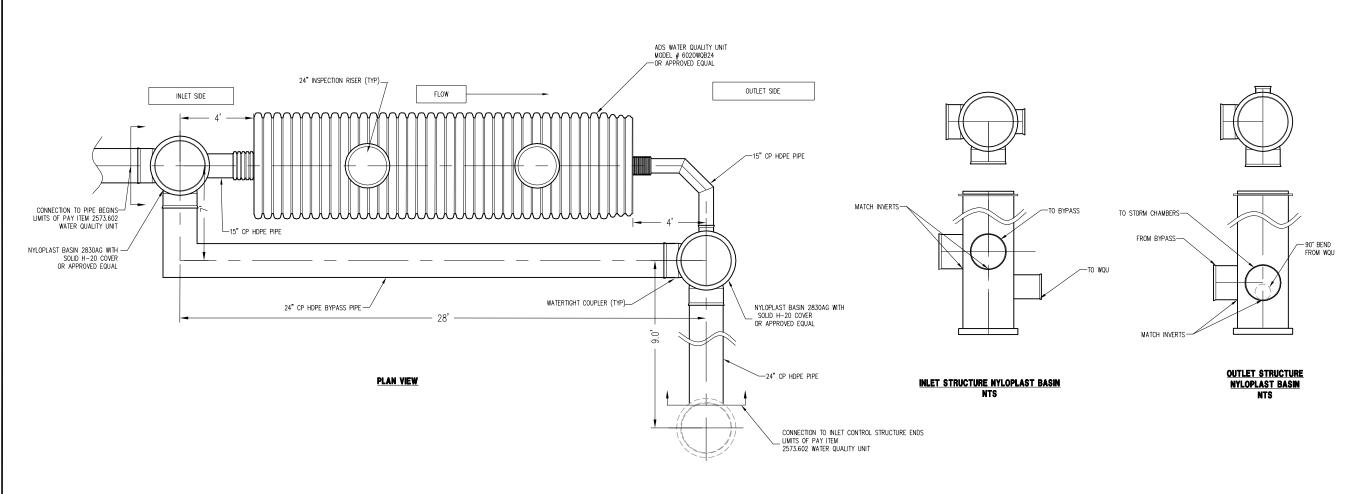
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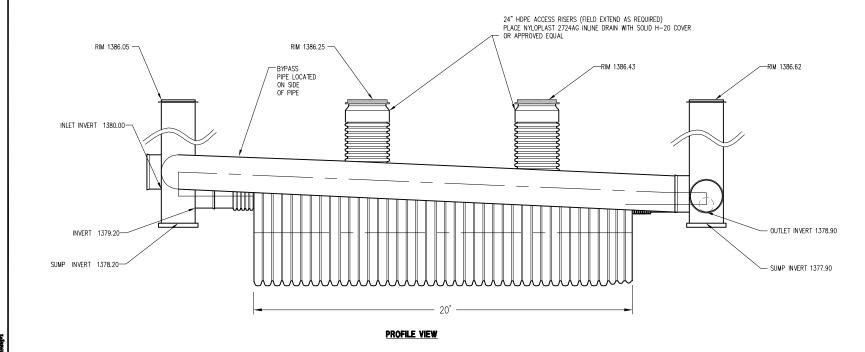
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WATER **QUALITY UNIT WEST**

SHEET NUMBER

C518





WATER QUALITY UNIT (EAST) N.T.S.



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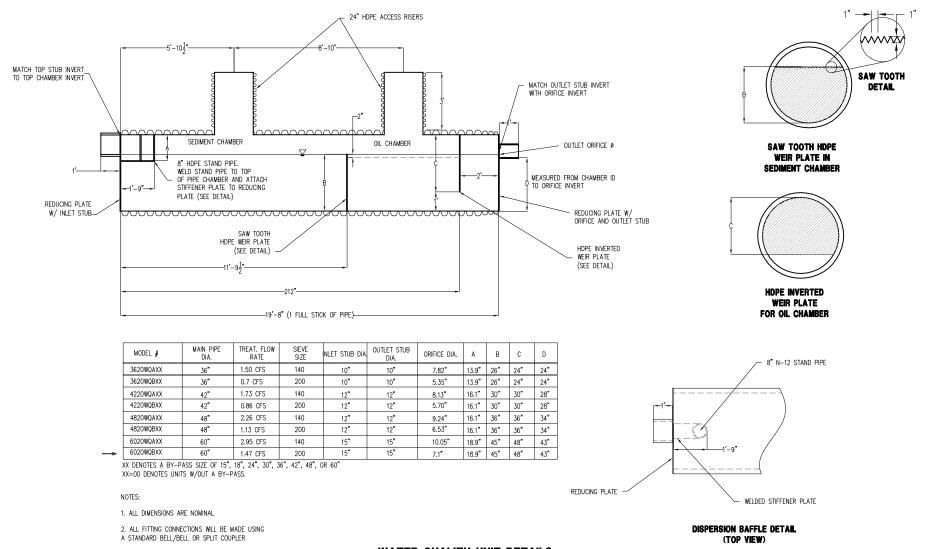
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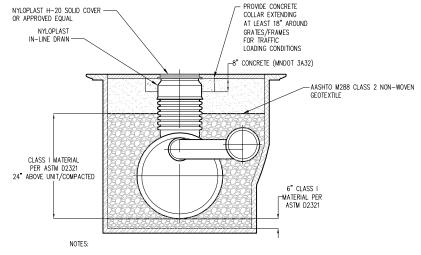
WATER **QUALITY UNIT EAST**

SHEET NUMBER

C519



WATER QUALITY UNIT DETAILS N.T.S.



- 1. CONTRACTOR SHALL REFER TO THE MANUFACTURE'S GUIDELINES FOR INSTALLATION.
- GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
 AND SHALL MEET H-20 LOAD RATING.
 FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05

- PLACE GEOTEXTILE AND BACKFILL WITH SELECT GRANULAR BORROW, MODIFIED 7%, FROM 24" ABOVE THE WATER QUALITY UNIT TO THE BOTTOM OF THE SUBBASE, PLACE IN 12" LIFTS AND COMPACT

WATER QUALITY UNIT INSTALLATION DETAIL



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Date 05/07/2009 Reg. No. 45009

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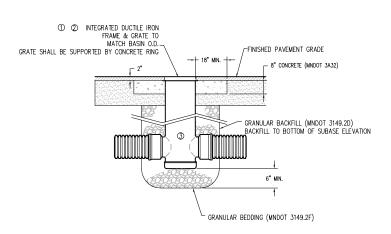
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WATER QUALITY UNIT DETAILS

SHEET NUMBER

C520

BID **DOCUMENTS**



- ① GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
- AND SHALL MEET H-20 LOAD RATING.

 ② FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05

 ③ DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS.

DRAIN BASIN INSTALLATION DETAIL N.T.S.

WATER NOTES

- ALL WATER LINES, HYDRANTS, VALVES AND FITTINGS SHALL BE INSTALLED AS PER THE CITY OF DULUTH PUBLIC WORKS UTILITIES DEPARTMENT STANDARD CONSTRUCTION SPECIFICATIONS, 2009 EDITION.
- THE CONTRACTOR SHALL VERIFY ALL QUANTITIES WITH THE
- 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.
- 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

- ALL SANITARY LINES AND MANHOLES SHALL BE INSTALLED AS PER THE CITY OF DULUTH PUBLIC WORKS UTILITIES DEPARTMENT STANDARD CONSTRUCTION SPECIFICATIONS, 2009 EDITION.
- 2. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES WITH THE ENGINEER PRIOR TO PURCHASE AND DELIVERY.
- THE CONTRACTOR CAN PLACE TEMPOARY BYPASS IN EXISITING SANITARY LINE OR OFF PEAK CONNECTION WHILE CONSTRUCTION OF SANITARY MANHOLE (SAN-1)

GAS NOTES

- THE CONTRACTOR SHALL INSTALL ALL GAS MAINS AND SERVICES PER THE CITY OF DULUTH PUBLIC WORKS UTILITIES DEPARTMENT STANDARD CONSTRUCTION SPECIFICATIONS, 2009 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.
- 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 VERIFIY THE LOCATION AND DEPTH OF GAS MAINS WITHIN EXCAVATION LIMITS.



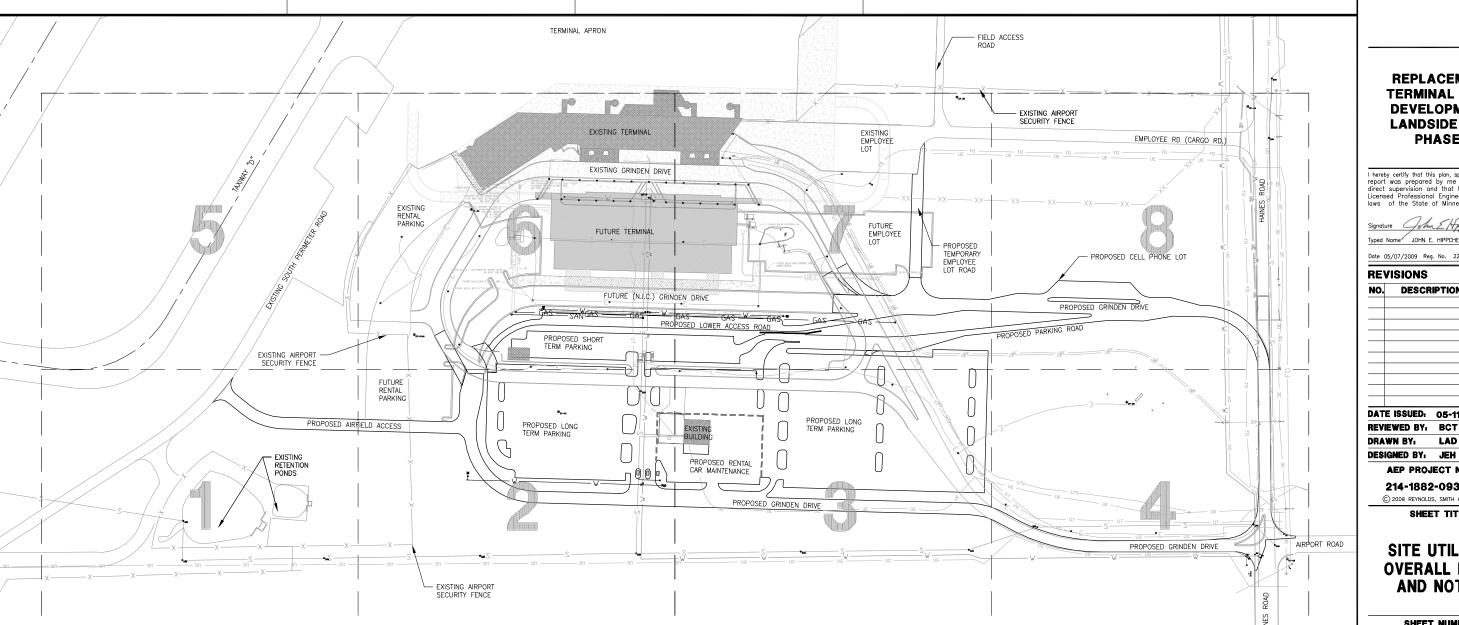


PRIOR TO DIGGING THE CONTRACTOR SHALL VERIFIY LOCATION OF UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL. 1-800-252-1166 THE CONTRACTOR SHALL BE RESPONSIBLE TO MARK, MAINTAIN, AND REMARK IF NECERSARY, ALL

PRIVATE (DAA) OWNED UTILITIES.

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Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Req. No. 22088

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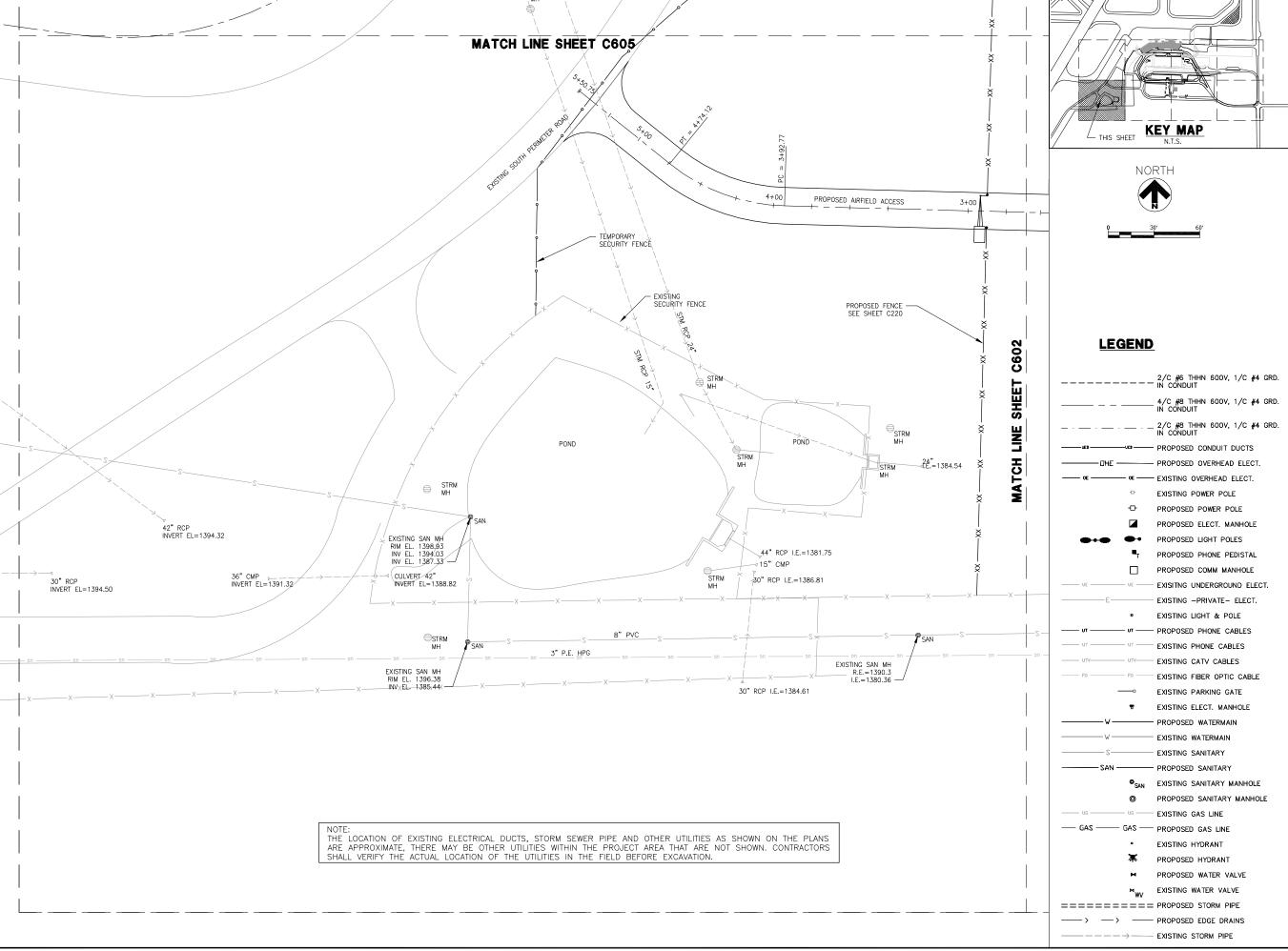
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SHEET TITLE

SITE UTILITY **OVERALL PLAN AND NOTES**

SHEET NUMBER

C600



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Signature John E. HippChen
Typed Name JOHN E. HIPPCHEN

NO. DESCRIPTION DATE

Date 05/07/2009 Reg. No. 22088

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DESIGNED BY: JEH

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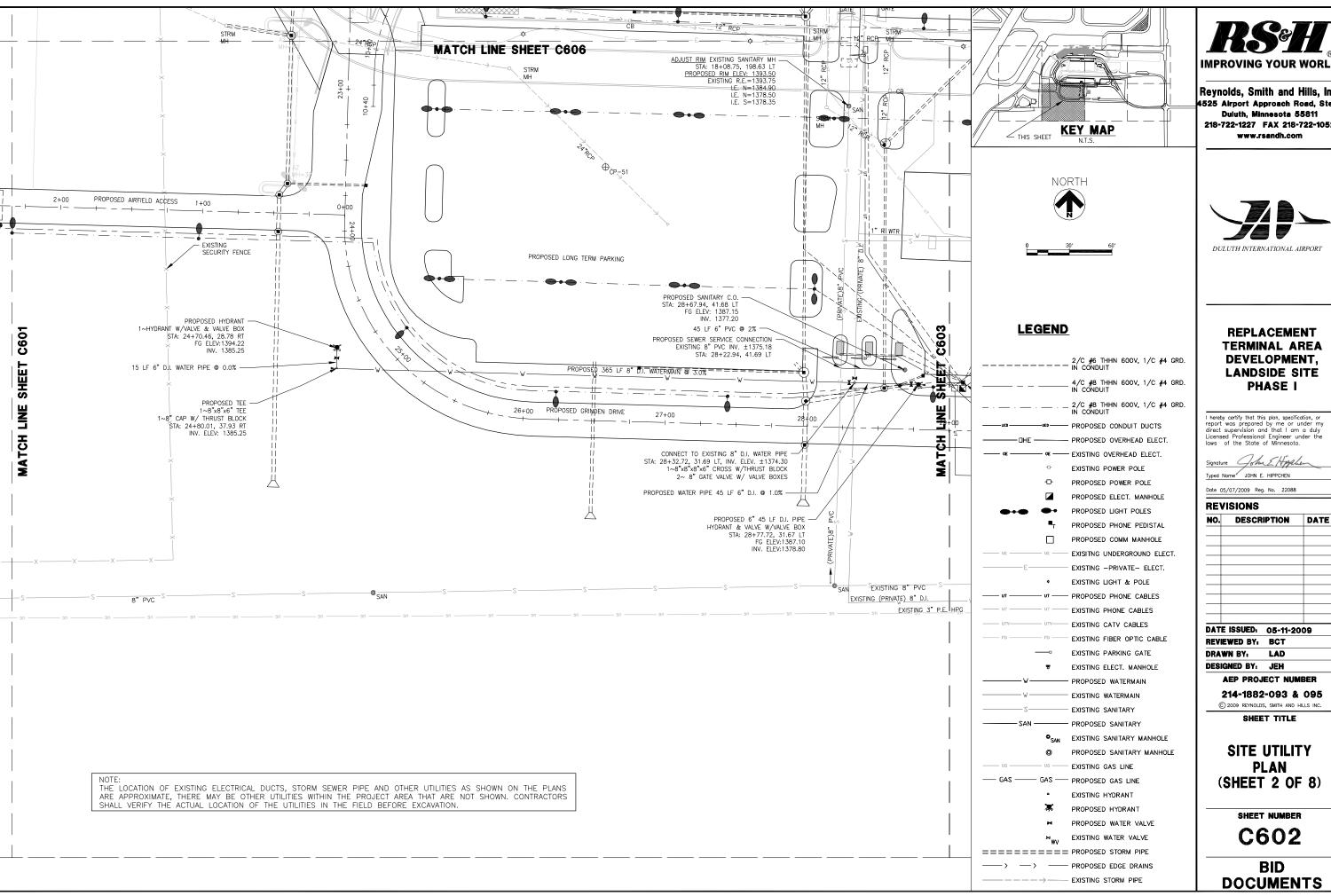
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SHEET TITLE

SITE UTILITY
PLAN
(SHEET 1 OF 8)

SHEET NUMBER

C601



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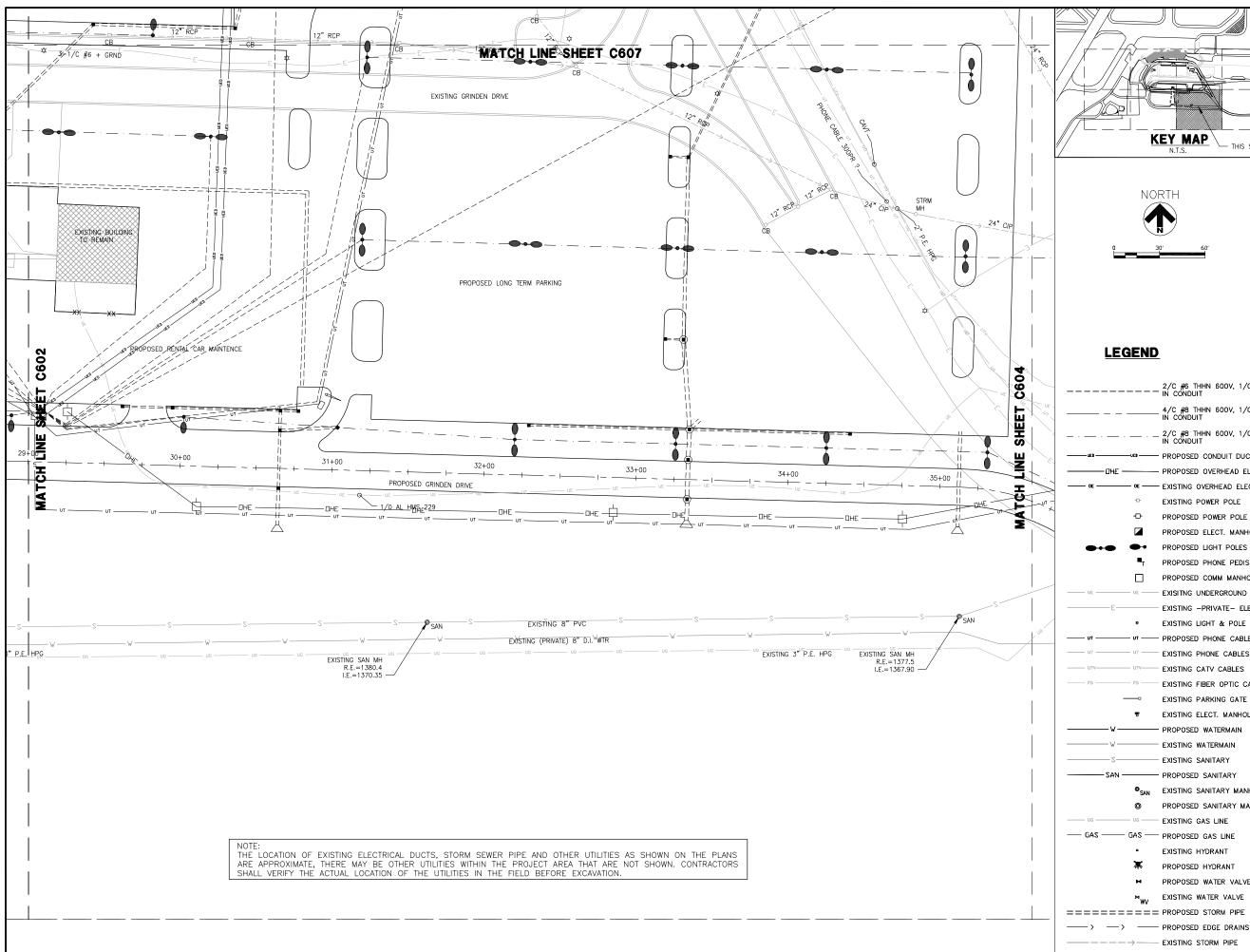
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SHEET TITLE

SITE UTILITY **PLAN** (SHEET 2 OF 8)

SHEET NUMBER

C602







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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 PEDISTAL PROPOSED COMM MANHOLE EXISITNG 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 SAN EXISTING SANITARY MANHOLE PROPOSED SANITARY MANHOLE EXISTING GAS LINE - GAS --- PROPOSED GAS LINE EXISTING HYDRANT

PROPOSED HYDRANT

MWV EXISTING WATER VALVE

------ Existing storm PIPE

PROPOSED WATER VALVE

REPLACEMENT **TERMINAL AREA** DEVELOPMENT, LANDSIDE SITE PHASE I

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Typed Name JOHN E. HIPPCHEN

NO. DESCRIPTION DATE

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DESIGNED BY: JEH

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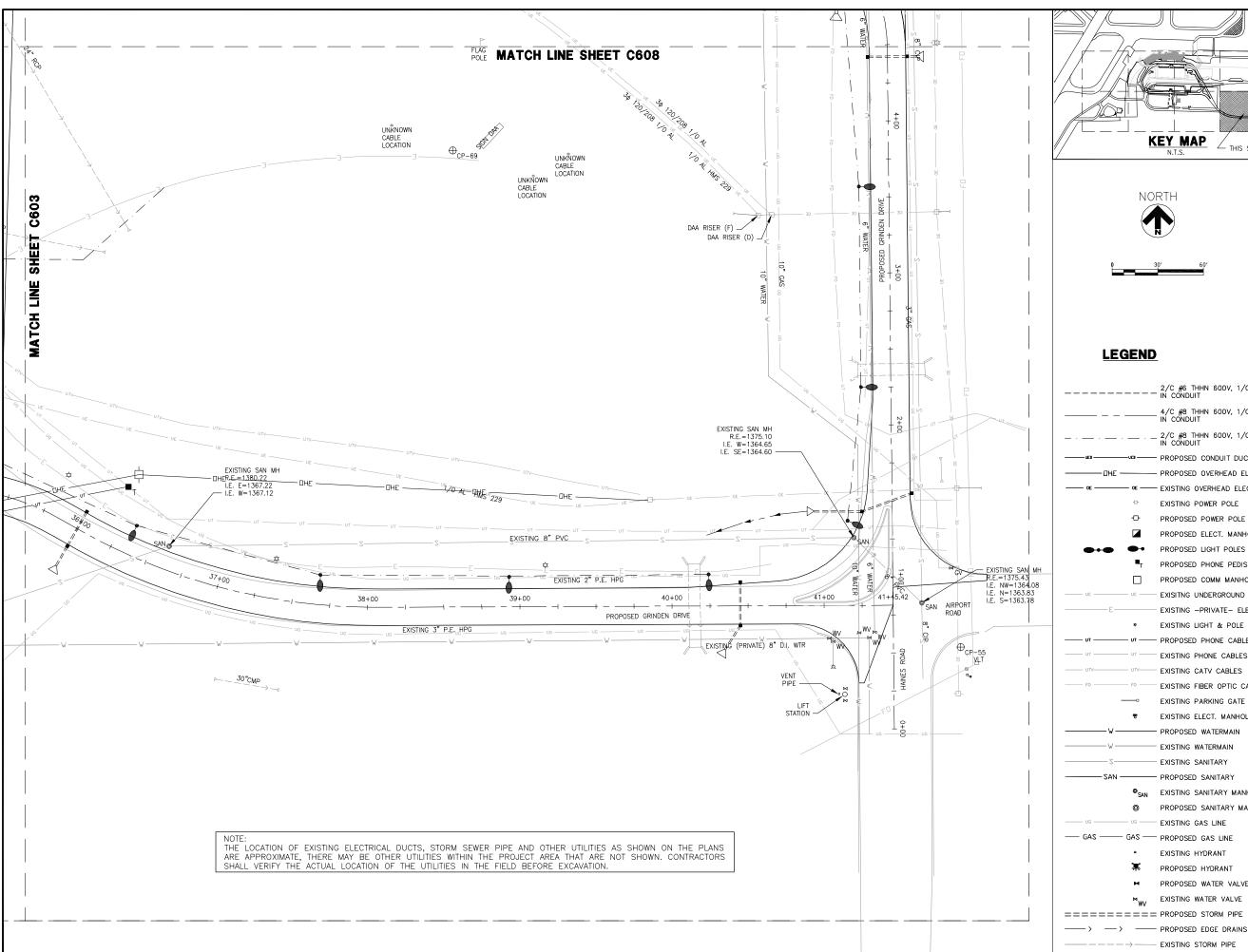
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SHEET TITLE

SITE UTILITY **PLAN** (SHEET 3 OF 8)

SHEET NUMBER

C603







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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 PEDISTAL PROPOSED COMM MANHOLE EXISITNG 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 SAN EXISTING SANITARY MANHOLE PROPOSED SANITARY MANHOLE EXISTING GAS LINE PROPOSED GAS LINE EXISTING HYDRANT

PROPOSED HYDRANT

EXISTING WATER VALVE

----- Existing storm PIPE

PROPOSED WATER VALVE

REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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Typed Name JOHN E. HIPPCHEN

NO. DESCRIPTION DATE

REVISIONS

DATE ISSUED: 05-11-2009 REVIEWED BY: BCT DRAWN BY: DESIGNED BY: JEH

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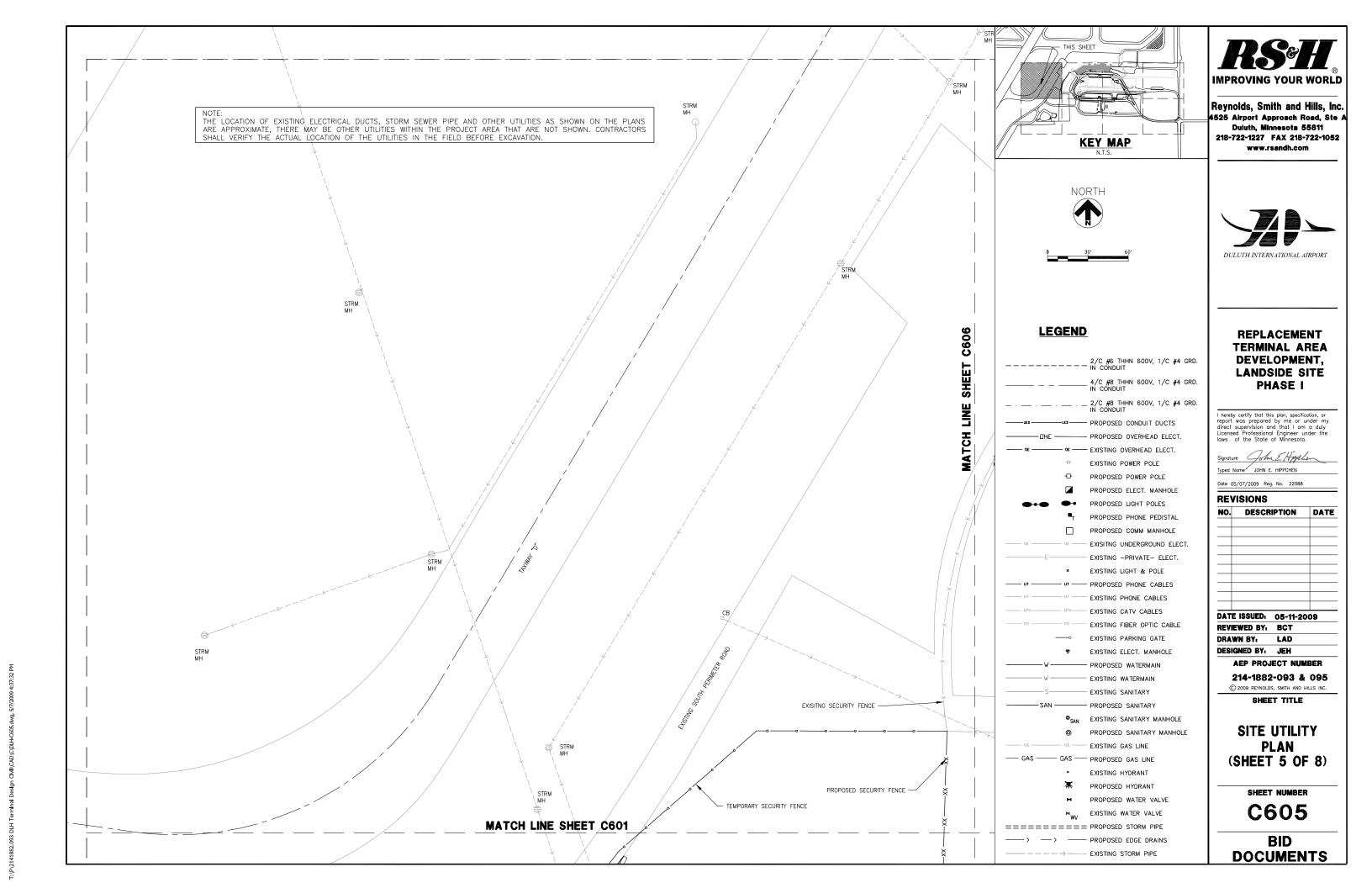
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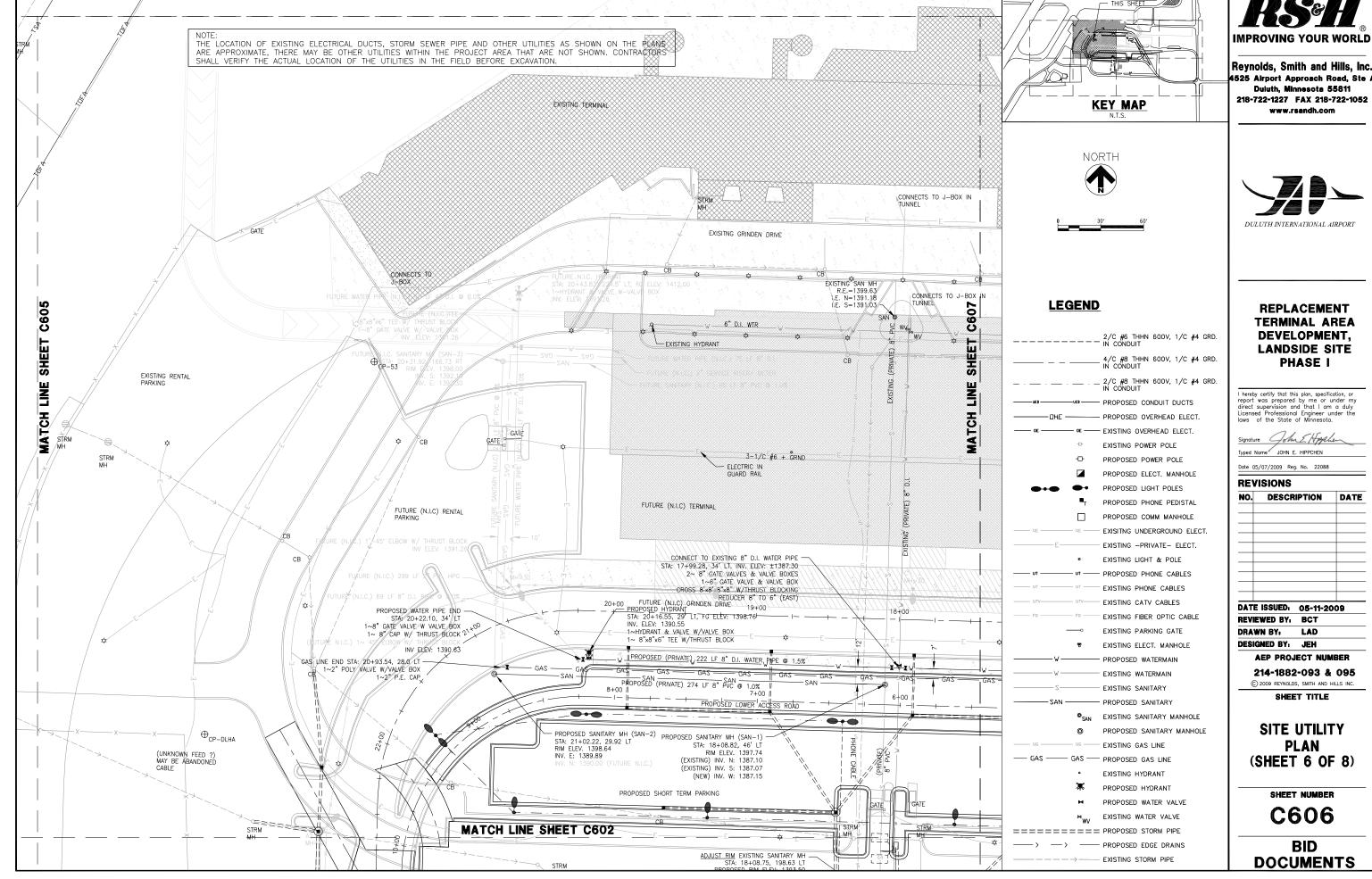
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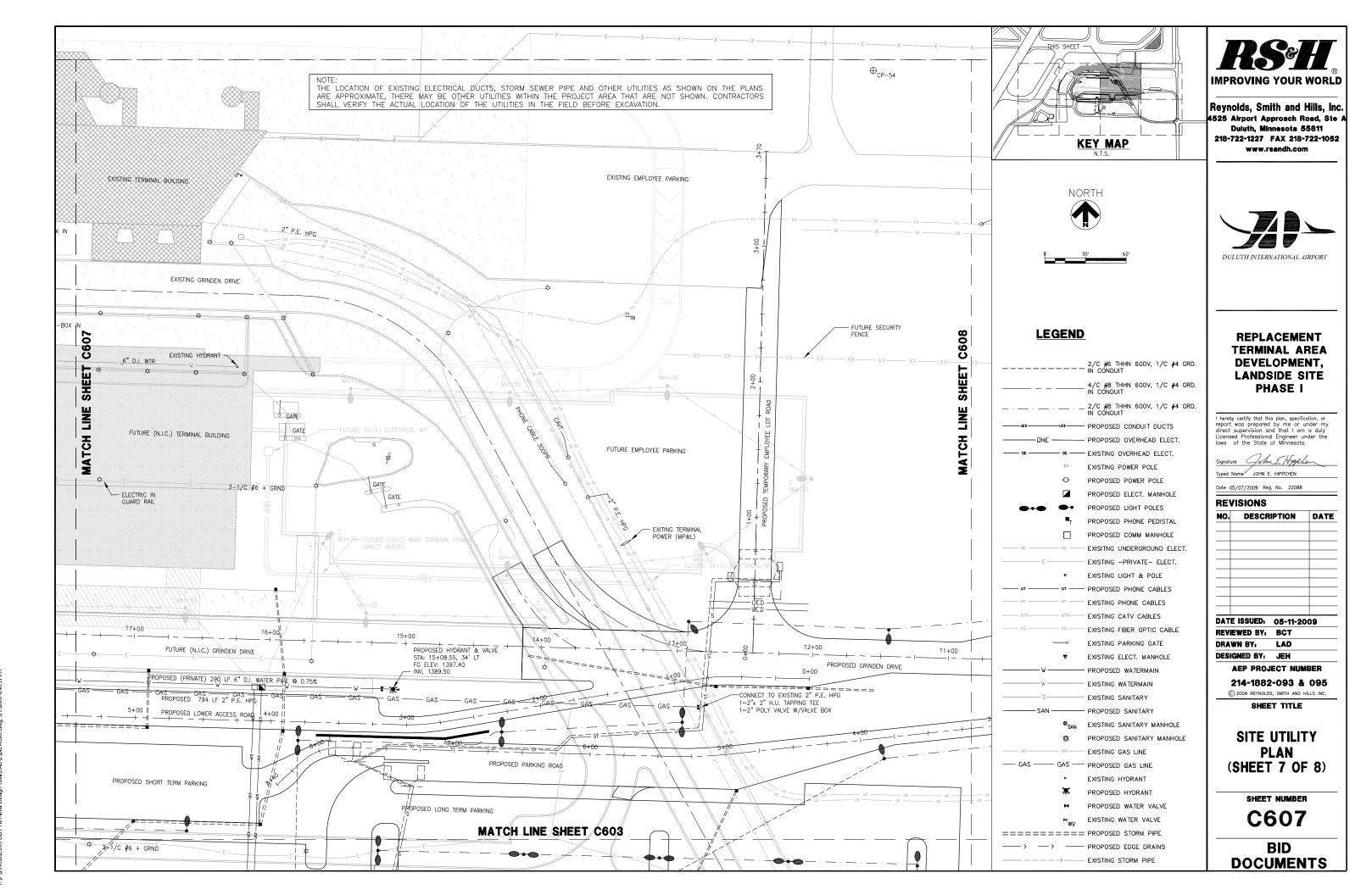
SITE UTILITY **PLAN** (SHEET 4 OF 8)

SHEET NUMBER

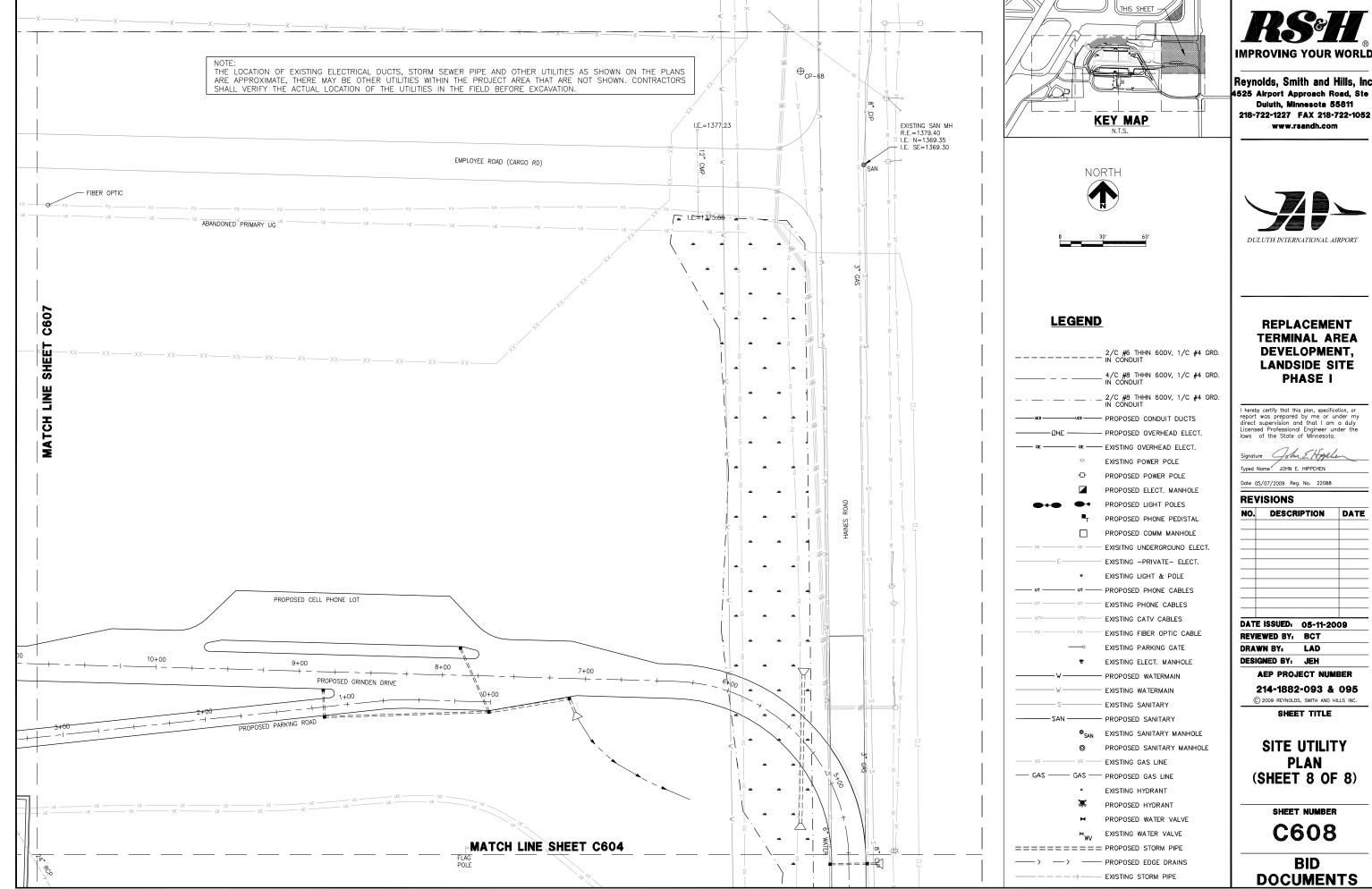
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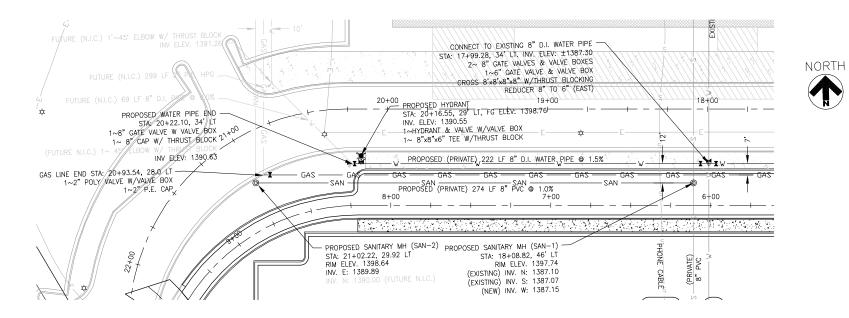


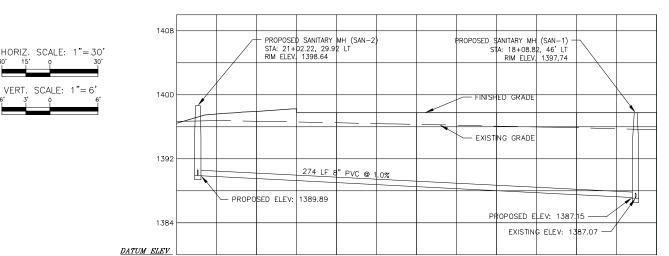
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NOTE:

PROVIDE TEMPORARY BYPASS AS NECESSARY FOR CONSTRUCTION OF SANITARY MANHOLE (SAN-1) THIS WORK SHALL BE CONSIDERED INCIDENTAL.







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REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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 under the laws of the State of Minnesota.

Signat	ure C	100	m	2 Hpghi
Typed	Name /	JOHN	E.	HIPPCHEN

Date 05/07/2009 Reg. No. 22088

REVISIONS

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NO.	DESCRIPTION	DATE			
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DATE ISSUED: 05-11-2009
REVIEWED BY: BCT

DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER

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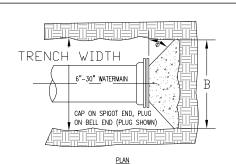
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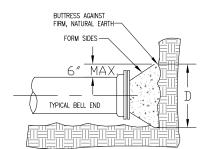
SANITARY PLAN AND PROFILE

SHEET NUMBER

C609

		30'
		6, Al
		Ě





ELEVATION

BL00	CKING DIMENS	IONS
PLUG SIZE	В	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"

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

- BE NECESSARY.

 ANGLEØ SHALL BE EQUAL TO OR LARGER THAN 45'.

 BLOCKING SHALL BE CENTERED ON MAIN.

 CONCRETE SHALL BE TYPE 3, GRADE B MNDOT 2461.

 DOLYCTRUENE SHALL BE TYPE TO GRADE BOOMEDETE E

	A A B B
PLAN - 90' BEND	CONCRETE SHALL BE IN CONTACT WITH THIS QUADRANT OF PIPE (MIN)
B	BEDDING MATERIAL
PLAN - 45° BEND	SECTION A-A
NOTES	

DIMENSIONS IN TABLE ARE BASED ON A WATER PRESSURE OF 150 P.S.I. & AN EARTH RESISTANCE OF 2 TONS/S.F. BLOCKING TO BE SET AGAINST UNDISTURBED SOIL

CONCRETE SHALL BE TYPE 3 GRADE B. (MNDOT SPEC. 2461) CONCRETE SHALL NOT INTERFERE WITH MECHANICAL

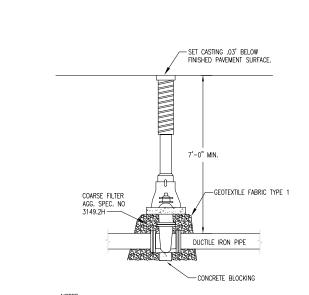
JOINTS
POLYETHLYENE SHALL BE USED TO SEPARATE CONCRETE FROM FITTING.

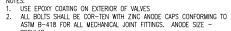
BLOCKING DIMENSIONS								
BEND OR BRANCH SIZE	22-1/2" BENDS		2-1/2" BENDS 45' BENDS		90' BENDS		TEES	
	В	D	В	D	В	D	В	D
0'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-4"	1'-2"	1'-3"	1'-0"
0'-8"	1'-0"	1'-0"	1'-4"	1'-2"	1'-10"	1'-6"	1'-6"	1'-4"
1'-0"	1'-4"	1'-4"	1'-10"	1'-10"	2'-8"	2'-3"	2'-3"	2"-0"
1'-4"	1'-10"	1'-8"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

- DUCTILE IRON MAIN TIE RODS OR MEGALUGS REQUIRED CONCRETE BLOCKING -- GATE VALVE HYDRANT-CITY OF DULUTH STANDARD REDUCING TEE 24"-30" NOT LESS THAN 3 MAIN TRENCH VARIABLE (SEE PLAN) --CONCRETE BLOCKING-COARSE FILTER AGG. SPEC. NO 3149.2H COARSE FILTER AGG. (INCIDENTAL) -SPEC. NO 3149.2H -GEOTEXTILE FABRIC TIE RODS OR MEGALUGS REQUIRED ESS.
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.
USE EPOXY COATING ON VALVE AND HYDRANT BASE.

ALL BOLTS SHALL BE COR-TEN WITH ZINC ANODE CAPS CONFORMING TO ASTM B-418 FOR ALL MECHANICAL JOINT

5. POLYETHYLENE SHALL BE USED TO SEPARATE CONCRETE FROM FITTING.			2-6 3-6 3	3-0 3-4 3-10 8-0 4-8 6-3	4-3	FITTINGS. ANODE SIZE - REGULA	R.		
PLUG	G BLOCKING FOR WATERMAIN	W-2	THRUS	ST BLOCKING FOR WATERMAIN	W-3	FIRE HYDRA	NT SETTING DETAIL — DUCTILE IRON	W-4	
REVISED/APPROVED 3/11/09	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE	REVISED/APPROVED 3/11/09	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE	REVISED/APPROVED 3/11/09	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE	





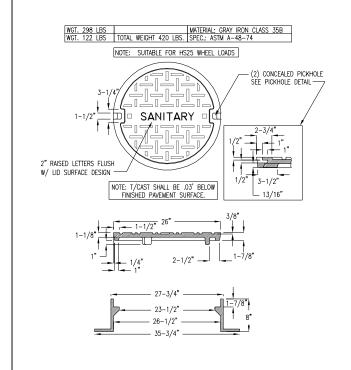
WATER VALVE BOX - DUCTILE IRON MAIN

REVISED/APPROVED 3/11/09

CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES

NO SCALE

REVIEWED/APPROVED 3/11/09



SANITARY CASTING DETAIL

CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES

CONTRACTOR SUPPLIED MAGNETIZED TRACER BOX WITH GREEN TOP, WIRE CONNECTED TO TRACER BOX TERMINAL.
LEAVE SLACK IN WIRE.
CONNECT PVC SEWER SERVICE 6" PVC SERVICE PIPE UP TO 4 FT. VARIES TRACER WIRE
PVC WYE CONNECT TO MAIN TRACER WIRE SPEC. NO. 3149.2H SPEC. NO. 3149.2H COARSE TILER AGGREGATE ANGLE VARIES TO MATCH EXISTING SERVICE PIPE NEOPRENE SLEEVE WITH STAINLESS STEEL BANDS ADAPT TO EXISTING PIPE MATERIAL ZINC ANDDE (2 LB. MIN.)
REQUIRED WHERE NO TRACER IS INSTALLED ON MAIN NEW SERVICE NEW SERVICE ON EXISTING MAIN
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

SAN-1

NO SCALE

- FOR NEW SERVICES, PIPE TO STOP AT RIGHT OF WAY
 #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

 FOR SERVICES, TRACER WIRE SHALL RUN FROM THE WYE AND TERMINATE IN A FLUSH MOUNTED TRACER BOX
 WITH A GREEN CAST IRON LOCKABLE TOP.
- WITH A GREEN CAST IRON LOCKABLE TOP.

 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.

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



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REPLACEMENT **TERMINAL AREA** DEVELOPMENT, LANDSIDE SITE PHASE I

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Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

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AEP PROJECT NUMBER

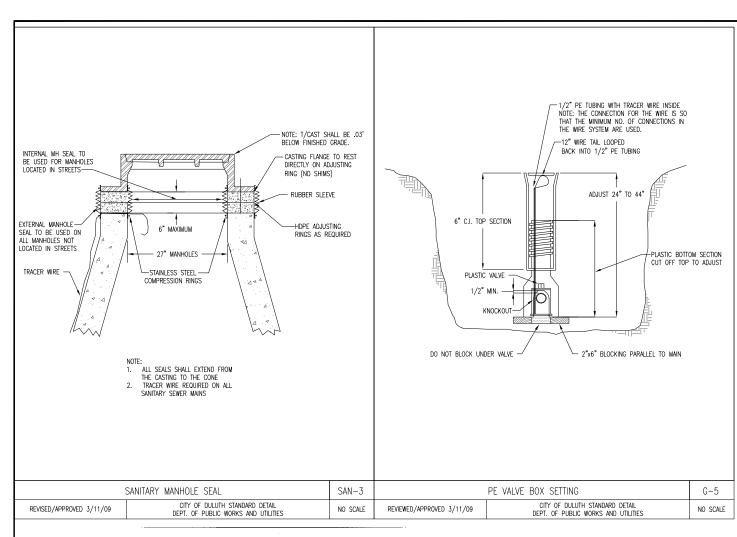
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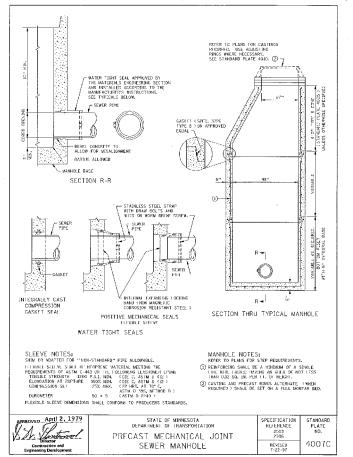
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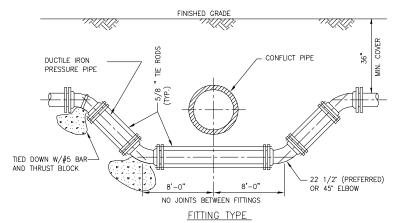
UTILITY CITY OF DULUTH **DETAILS** (SHEET 1 OF 2)

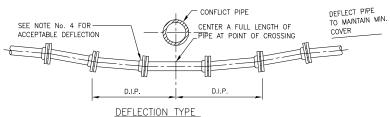
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C610







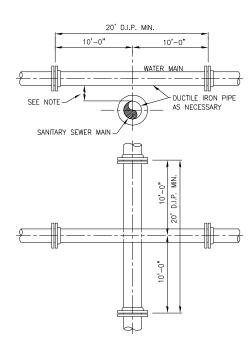


NOTES:

- 1. THERE SHALL BE IN ALL CASES A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN WATER
- 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
- 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.



<u>NOTES</u>

- 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 LIKES 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



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Date 05/07/2009 Reg. No. 22088

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DATE ISSUED: 05-11-2009 REVIEWED BY: BCT

DRAWN BY: DESIGNED BY: JEH

AEP PROJECT NUMBER

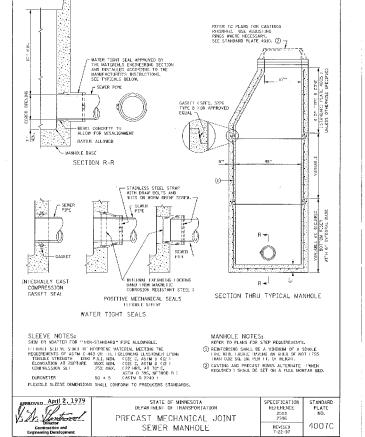
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SHEET TITLE

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

SHEET NUMBER

C611



PAVEMENT MARKING AND SIGNAGE NOTES

- ALL SIGNS, PAYMENT 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
- 5. SIGNS LOCATIONED 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 INCEDENTAL TO INSTALLING SIGN.

LEGEND

PEDESTRIAN CROSSWALK PAVEMENT MARKINGS

4" WIDE PAVEMENT MARKINGS

DIRECTIONAL ARROW STOP BAR PAVEMENT MARKING

SIGN COMPLETE W/ POST

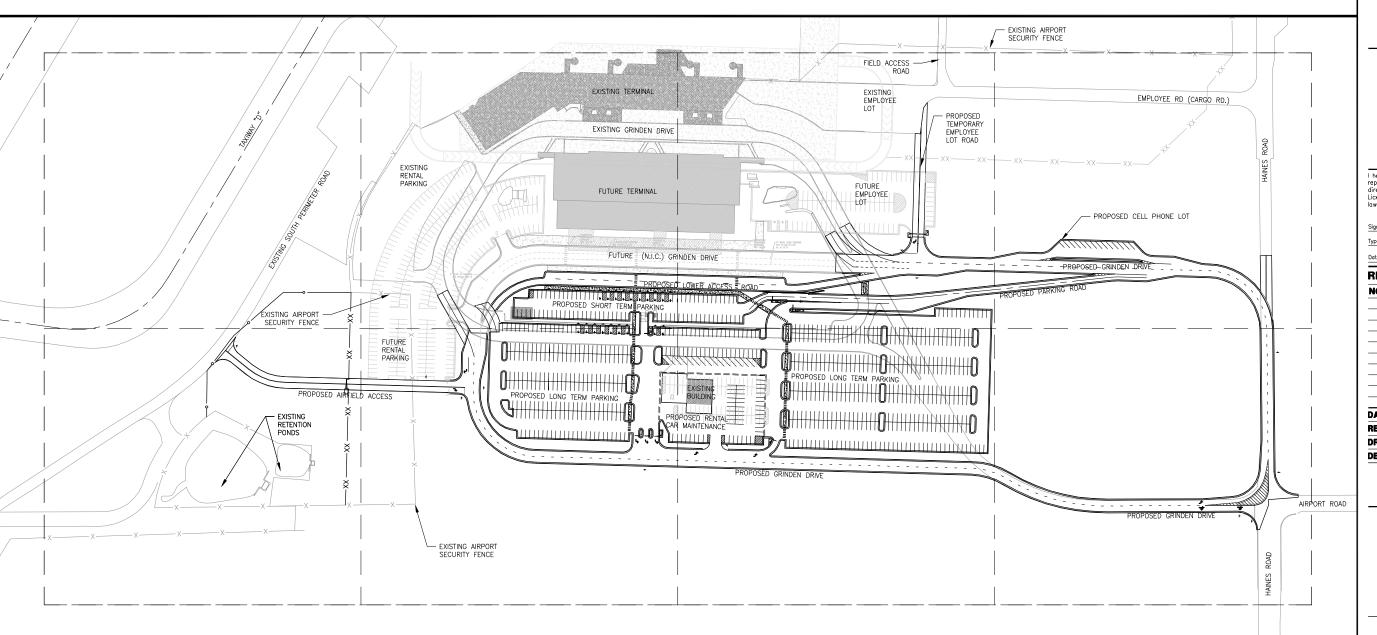
FUTURE PAVEMENT MARKINGS (TYPICAL)





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Date 05/07/2009 Req. No. 22088

REVISIONS

NO. DESCRIPTION DATE DATE ISSUED: 05-11-2009 REVIEWED BY: BCT DRAWN BY: DESIGNED BY: JEH **AEP PROJECT NUMBER**

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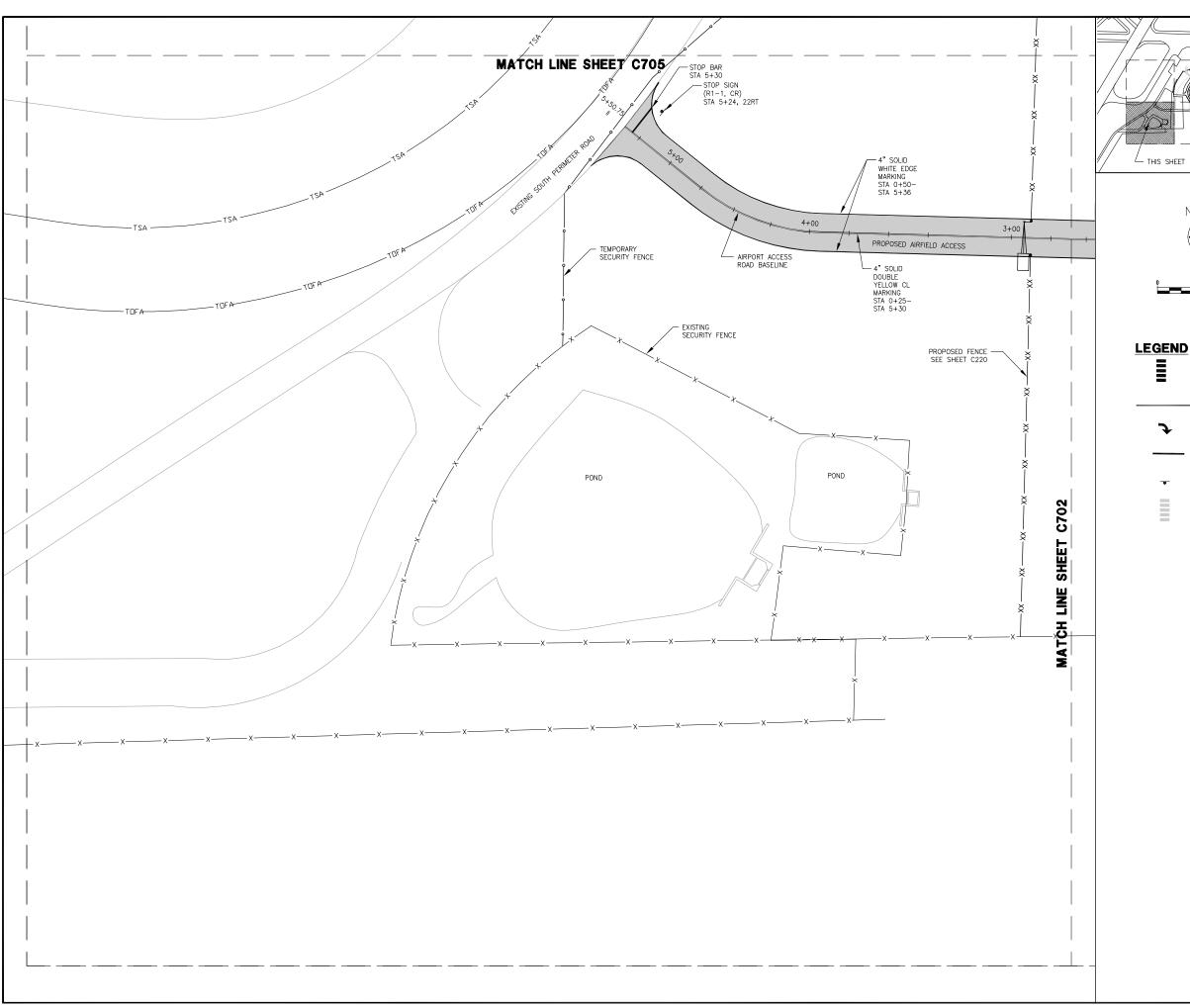
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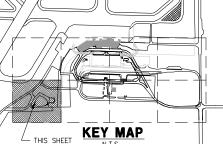
SHEET TITLE

PAVEMENT MARKING & SIGNAGE **OVERALL SITE PLAN**

SHEET NUMBER

C700





NORTH

PEDESTRIAN CROSSWALK PAVEMENT MARKINGS

DIRECTIONAL ARROW

4" WIDE PAVEMENT MARKINGS

STOP BAR PAVEMENT MARKING

SIGN COMPLETE W/ POST - TYPE AS NOTED

FUTURE PAVEMENT MARKINGS



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REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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Signature John E. HippChen
Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

NO. DESCRIPTION DATE

DAT	E ISSUED:	05-11-20	9

REVIEWED BY: BCT
DRAWN BY: RDRE
DESIGNED BY: JEH

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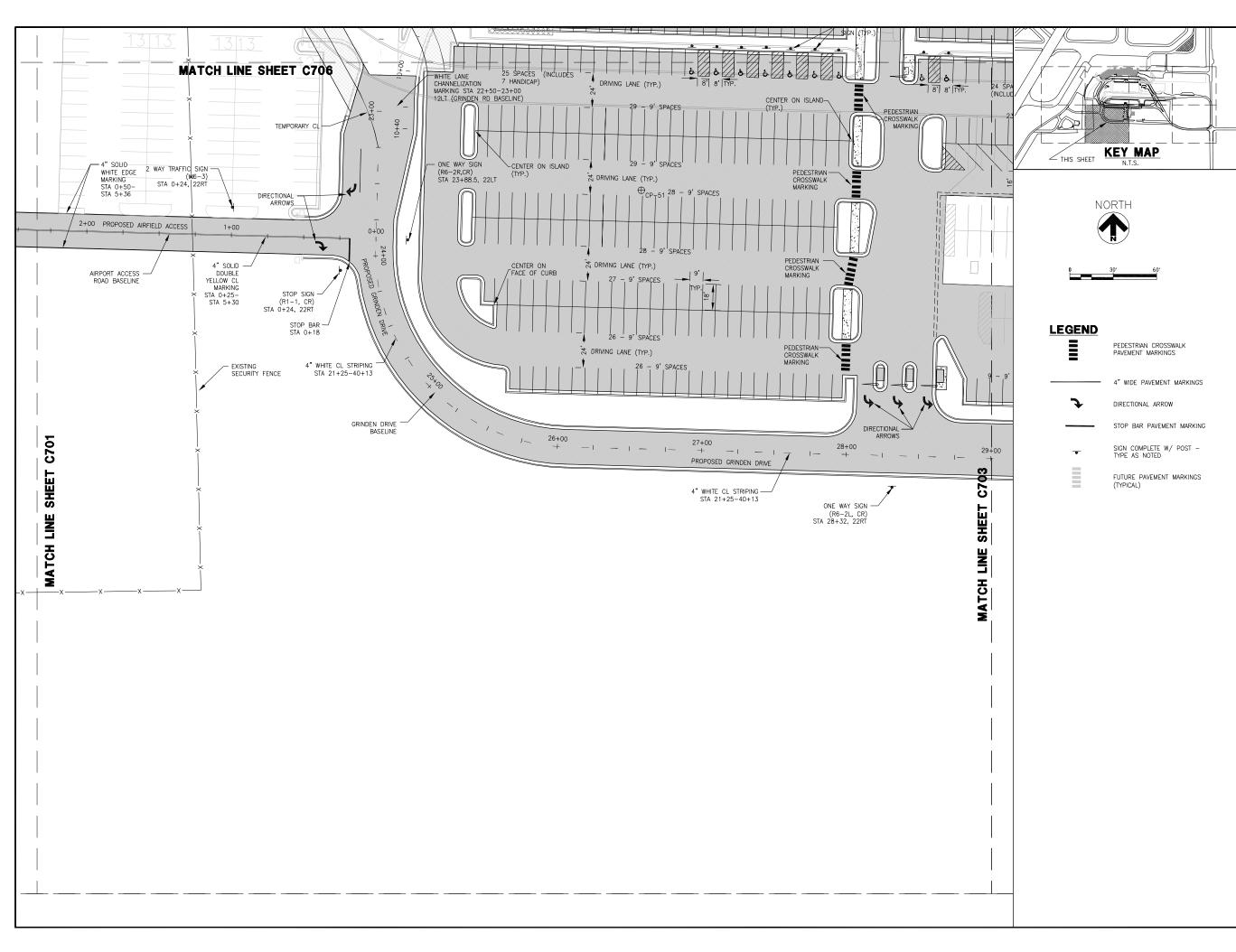
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SHEET TITLE

PAVEMENT MARKING & SIGNAGE PLAN (SHEET 1 OF 8)

SHEET NUMBER

C701



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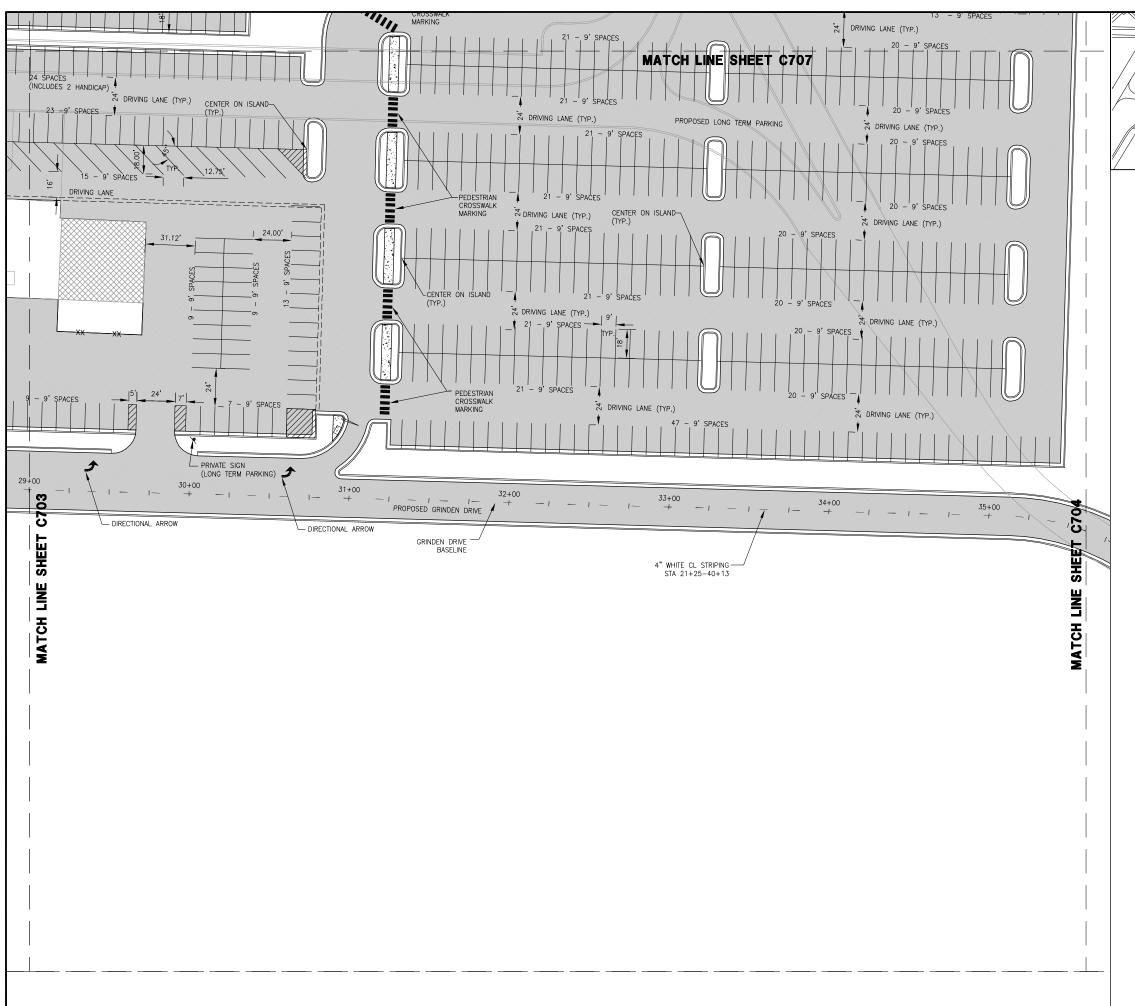
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SHEET TITLE

PAVEMENT MARKING & SIGNAGE PLAN (SHEET 2 OF 8)

SHEET NUMBER

C702







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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

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REVIEWED BY: BCT DRAWN BY:

DESIGNED BY: JEH

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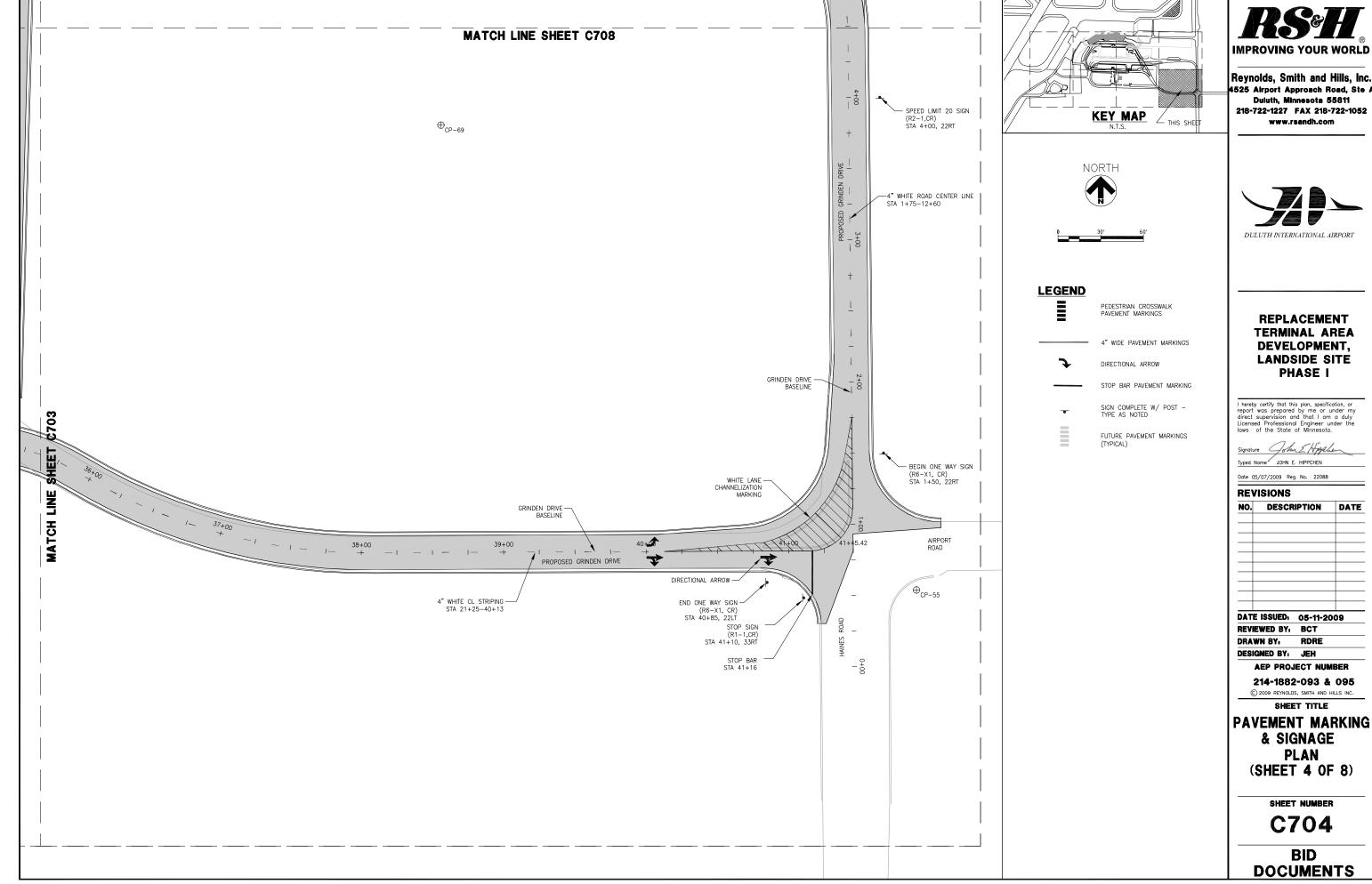
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PAVEMENT MARKING & SIGNAGE PLAN (SHEET 3 OF 8)

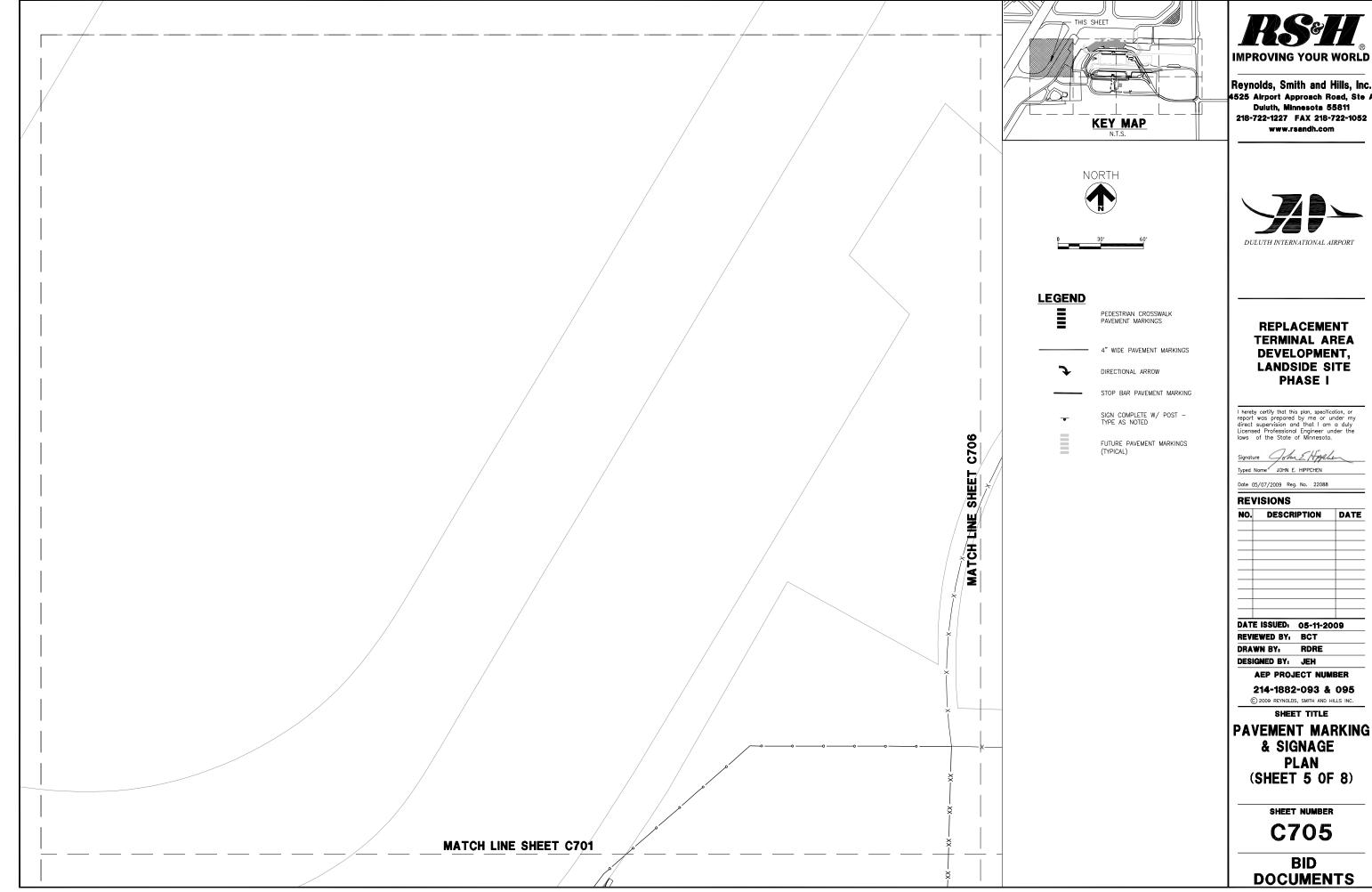
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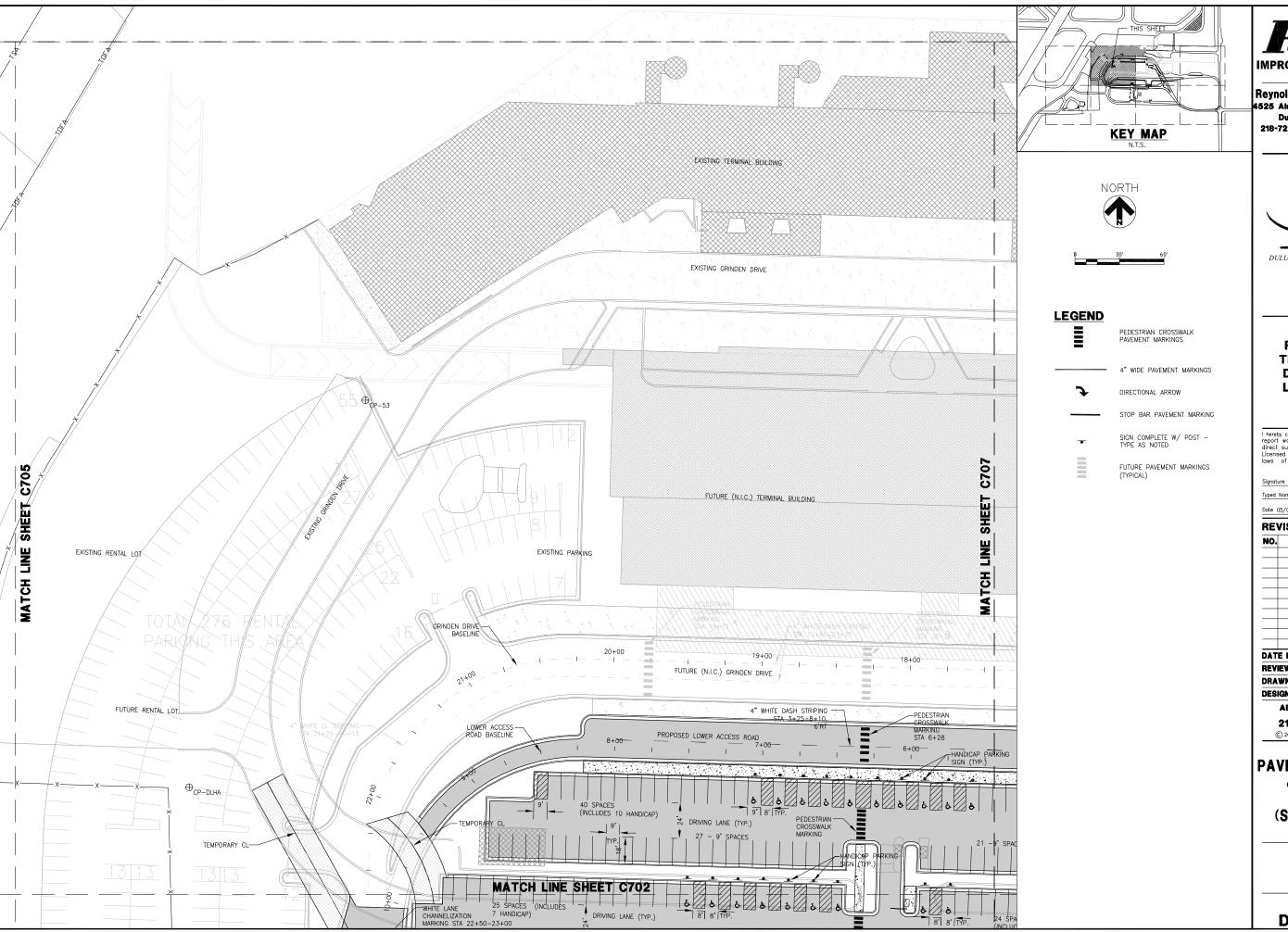




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Signature John E. Hippolien

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Date 05/07/2009 Reg. No. 22088

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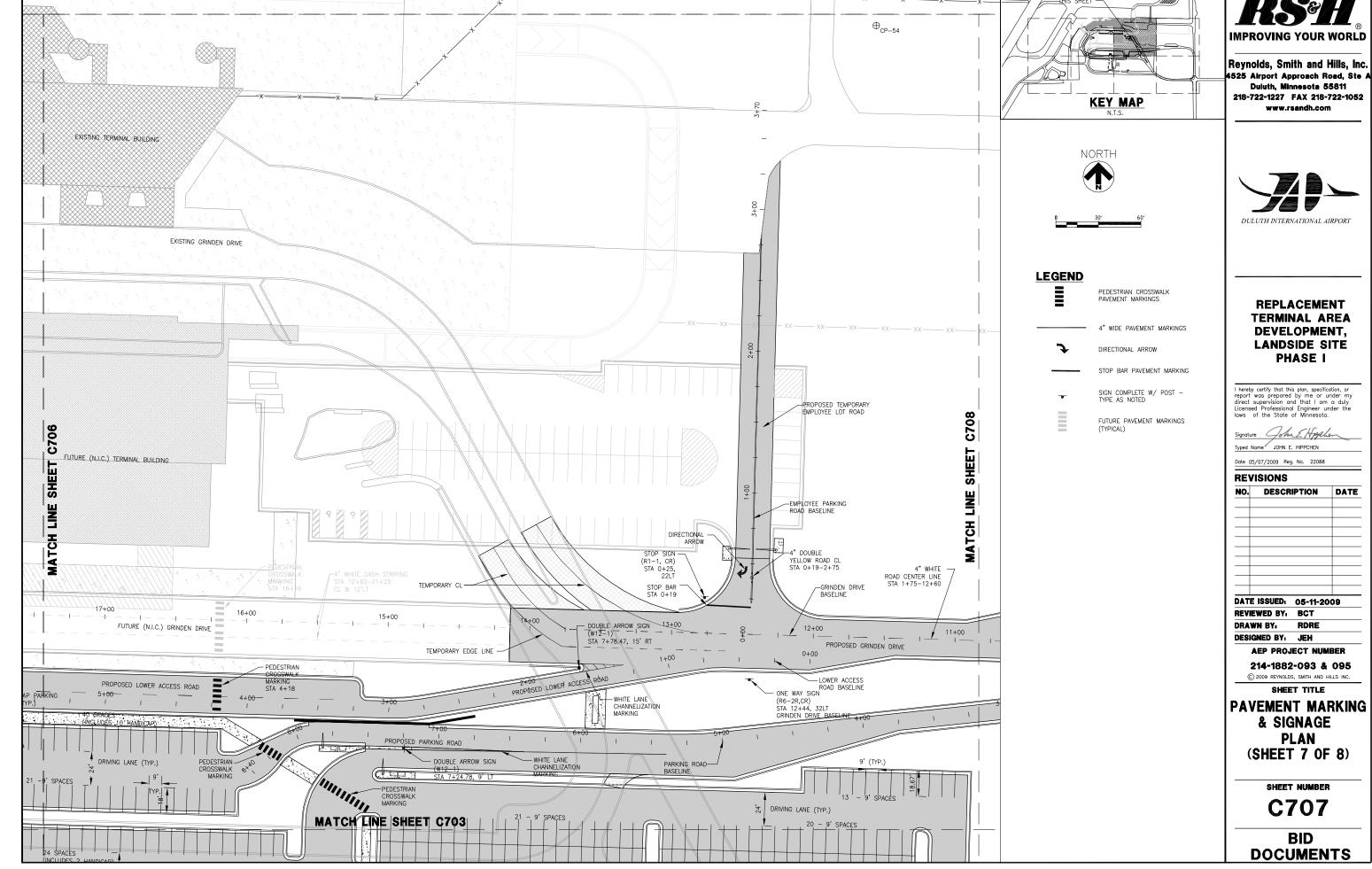
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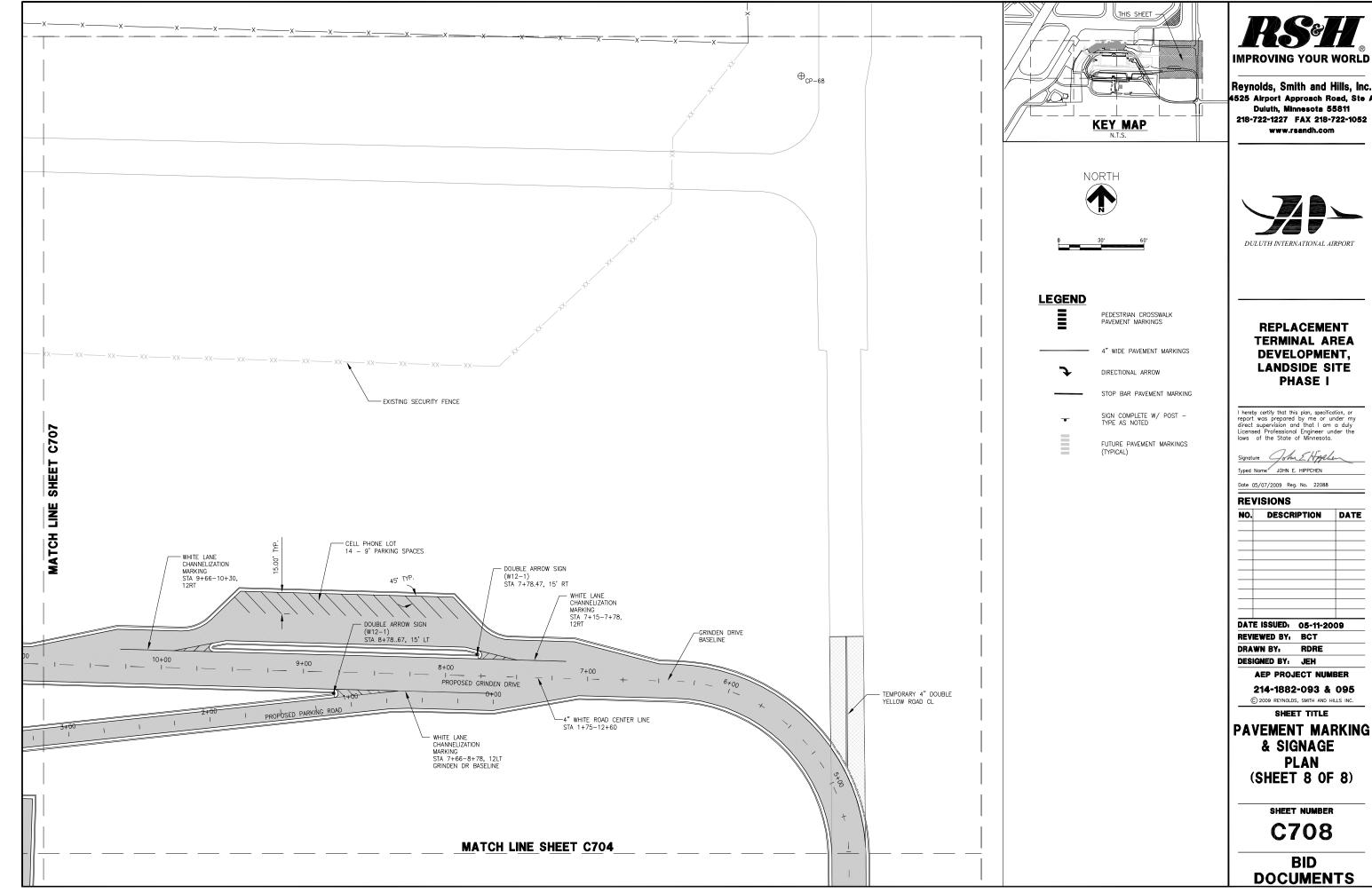
SHEET TITLE

PAVEMENT MARKING & SIGNAGE PLAN (SHEET 6 OF 8)

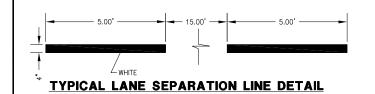
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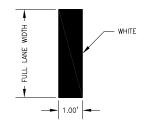
C706



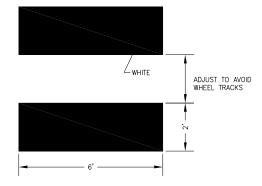


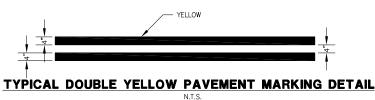
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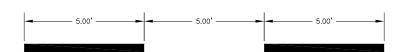


TYPICAL STOP LINE PAVEMENT MARKING DETAIL

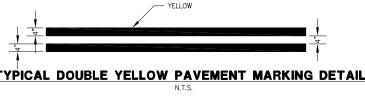


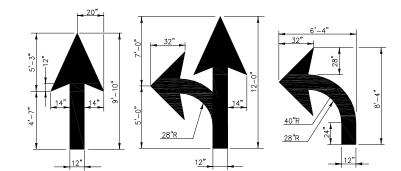


TYPICAL PEDESTRIAN CROSSWALK MARKING DETAIL



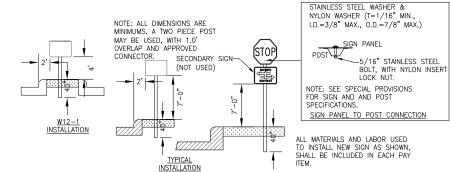
TYPICAL LANE SEPARATION MARKING DETAIL (STA 12+61.54 TO STA 25+00 - PROPOSED GRINDEN DRIVE) N.I.C.



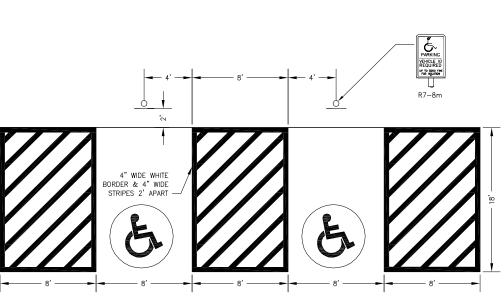


ALL PAVEMENT MARKINGS SHALL BE PAINTED TRAFFIC WHITE.

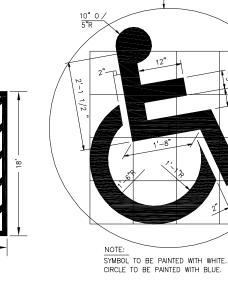
DIRECTIONAL ARROW PAVEMENT MARKING DETAILS



SIGN INSTALLATION DETAIL

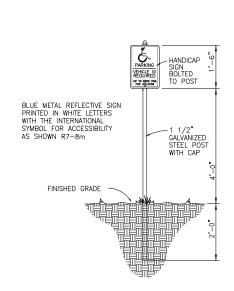


TYPICAL HANDICAP PARKING SPACE DETAIL



TYPICAL PAVEMENT MARKING FOR HANDICAPPED SYMBOL

∠ FACE OF CURB



TYPICAL HANDICAP PARKING SIGN

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REPLACEMENT **TERMINAL AREA** DEVELOPMENT, LANDSIDE SITE PHASE I

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Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

REVISIONS			
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DATE ISSUED: 05-11-2009 REVIEWED BY: BCT

DRAWN BY: DESIGNED BY: JEH

AEP PROJECT NUMBER

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SHEET TITLE

PAVEMENT MARKING & SIGNAGE DETAILS

SHEET NUMBER

C709

SITE ELECTRICAL NOTES

ELECTRICAL NOTES:

CENEDA

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 1" 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:

COORDINATE INSTALLATION OF NEW 480 V. O.H. ELECTRIC SERVICE W/ MINNESOTA POWER TO MH LOCATION AS SHOWN. PROVIDE ENTRANCE & METER HARDWARE REQUIRED.

PROVIDE CONCRETE BASE FOR MOUNTING PANEL FP ON EMBEDDED GALVANIZED STEEL STRUT. PROVIDE TWO 3" GRS CONNECTIONS TO MANIFOLE

PANEL FP SHALL BE SERVICE ENTRANCE RATED NEMA 4X SS 480/277 V, 3 PHASE, 125A, 42 POLE, WITH COPPER BUS, & BOLT ON PROGRAMMABLE CIRCUIT BREAKERS. SQUARE D TYPE NF POWERLINK G3 OR APPROVED EQUAL (SEE SPECIFICATIONS). PROVIDE A TYPEWRITEN CIRCUIT DIRECTORY IN STEEL FRAME ON INSIDE OF DOOR.

PROVIDE PHOTOCELL CONTROL MOUNTED AT NORTH SIDE OF NEAREST TICKET BOOTH ROOF. CONNECT TO PANEL FP CONTROLLER.

PROVIDE BRANCH CIRCUIT WIRING TO LIGHT POLES & TICKET DISPENSERS USING #6 WIRE TO FIRST POLE/DISPENSER AND #8 WIRE TO REMAINING POLES ON RUN.

PROVIDE 480 V TO 208 V TRANSFORMER AT PANELBOARD FOR GATE OPERATOR AND TEMPORARY CONNECTIONS FOR EXISTING OUTDOOR LIGHTING

PROVIDE TWO 2" PVC CONDUIT CONNECTIONS BETWEEN ADJACENT ENTRY/EXIT ISLANDS AND BETWEEN ADJACENT TICKET BOOTHS STUBBED 6" AFG. CONNECT NEAREST TICKET BOOTH TO POWER MH AND TO COMM MH WITH A SINGLE 2" PVC CONDUIT.

PROVIDE TWO 2" GRS CONDUIT, CONCRETE ENCASED TO NEW AIRFIELD ACCESS ROAD GATE OPERATOR, STUBBED 6" AFG. PROVIDE A 1" PVC CONDUIT CONNECTION BETWEEN THE GATE OPERATOR AND EACH CARD ACCESS STATION.







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Date 05/07/2009 Reg. No. 22088

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DATE	ISSUED: 05-11-20	009

REVIEWED BY: BCT
DRAWN BY: LAD
DESIGNED BY: B A

AEP PROJECT NUMBER

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SHEET TITLE

& COMM.
OVERALL
PLAN AND NOTES

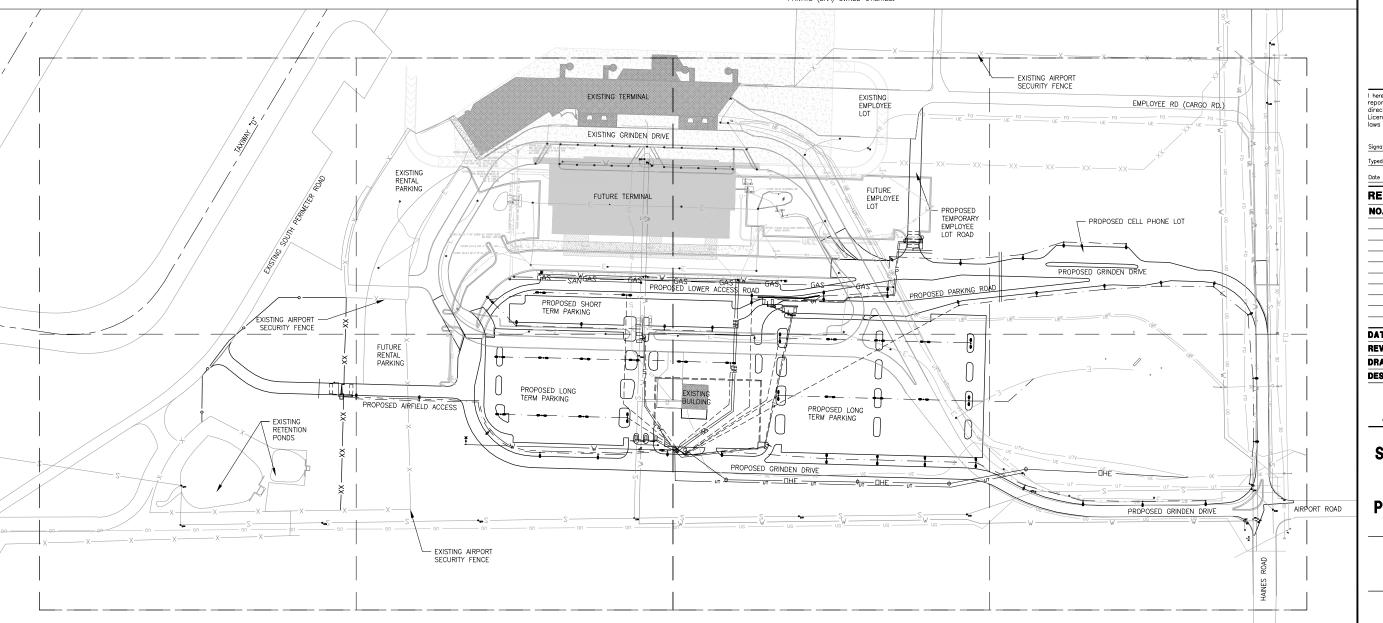
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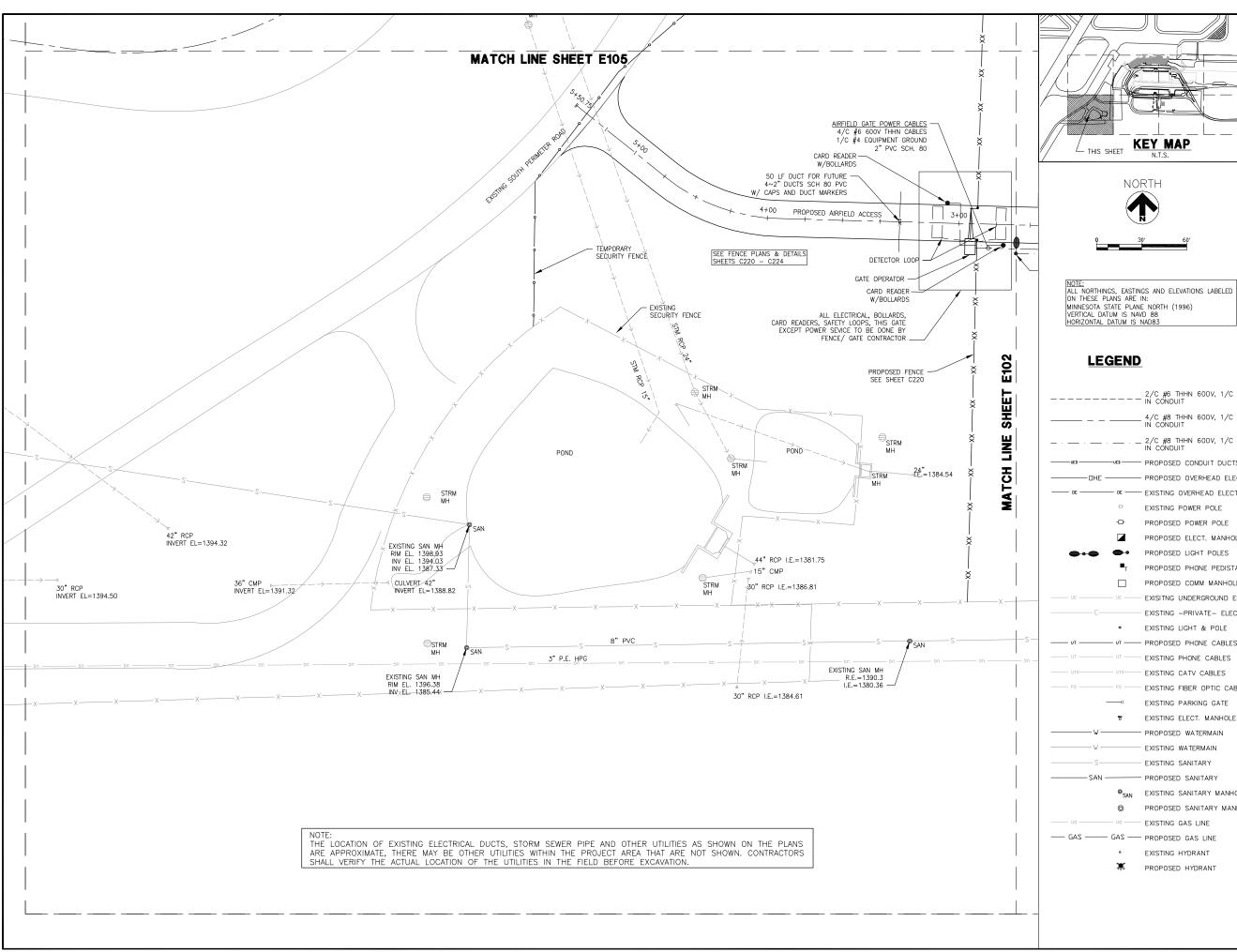
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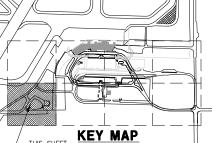
BID DOCUMENTS

NOTE:

- PRIOR TO DIGGING THE CONTRACTOR SHALL VERIFIY LOCATION OF UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL. 1-800-252-1166
- THE CONTRACTOR SHALL BE RESPONSIBLE TO MARK, MAINTAIN, AND REMARK IF NECERSARY, ALL PRIVATE (DAA) OWNED UTILITIES.







NORTH

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 PHONE PEDISTAL

PROPOSED COMM MANHOLE

- PROPOSED PHONE CABLES

EXISTING PHONE CABLES

EXISTING CATV CABLES

EXISTING PARKING GATE

EXISTING ELECT. MANHOLE

PROPOSED WATERMAIN

EXISTING WATERMAIN

EXISTING SANITARY

EXISTING GAS LINE

 EXISTING HYDRANT PROPOSED HYDRANT

PROPOSED SANITARY ©SAN EXISTING SANITARY MANHOLE

PROPOSED SANITARY MANHOLE

EXISTING FIBER OPTIC CABLE

EXISITNG UNDERGROUND ELECT. EXISTING -PRIVATE- ELECT. EXISTING LIGHT & POLE

PROPOSED LIGHT POLES



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Signa	ture $<$	John	5	Hope	len
Typed	Name	JOHN E	. HIPP	CHEN	
Date	05/07/20	009 Rec	g. No.	22088	

REVISIONS

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DATE ISSUED: 05-11-2009 REVIEWED BY: BCT

DRAWN BY: DESIGNED BY: BOA

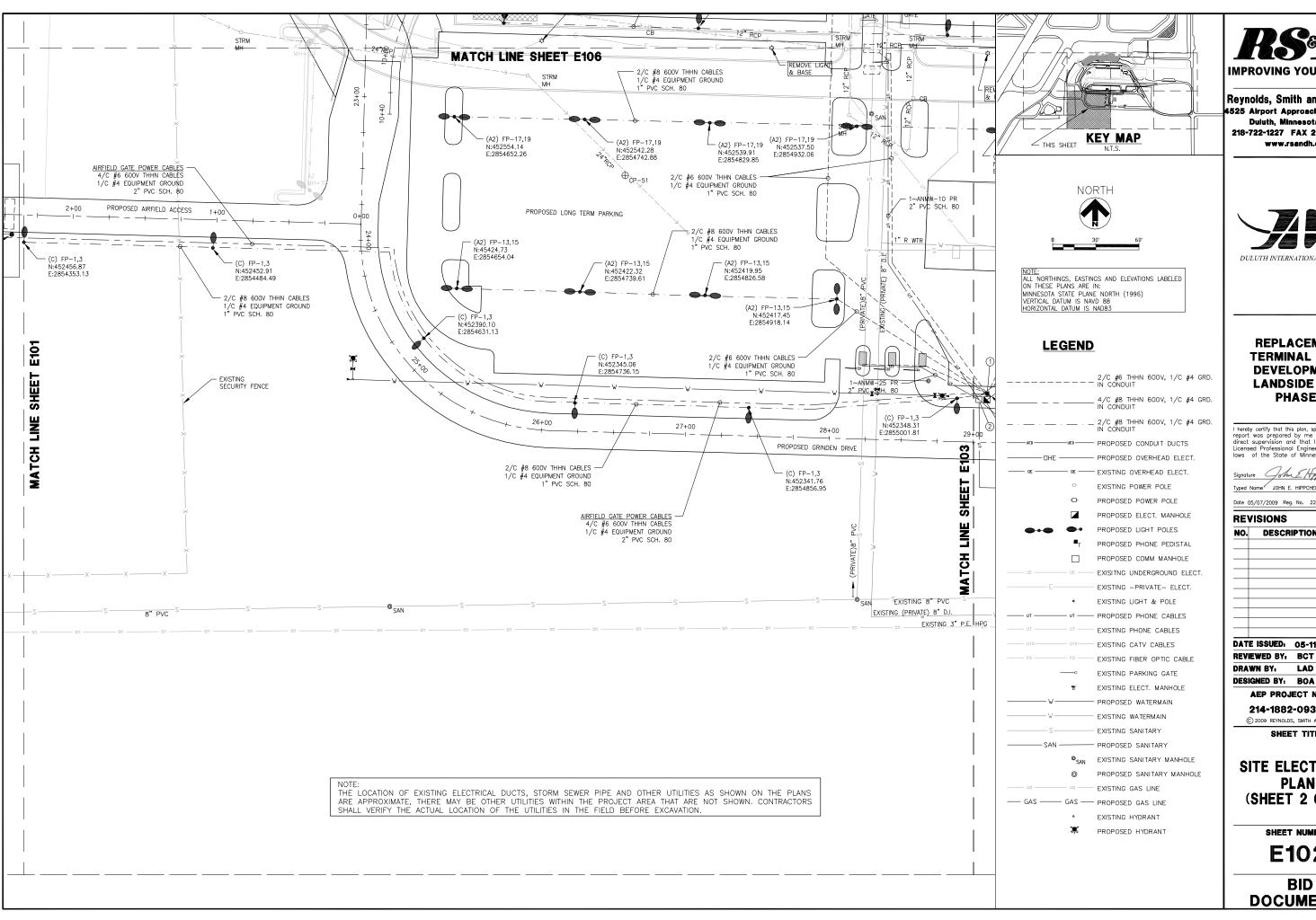
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SHEET TITLE

SITE ELECTRICAL **PLAN** (SHEET 1 OF 8)

SHEET NUMBER

E101



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AEP PROJECT NUMBER 214-1882-093 & 095

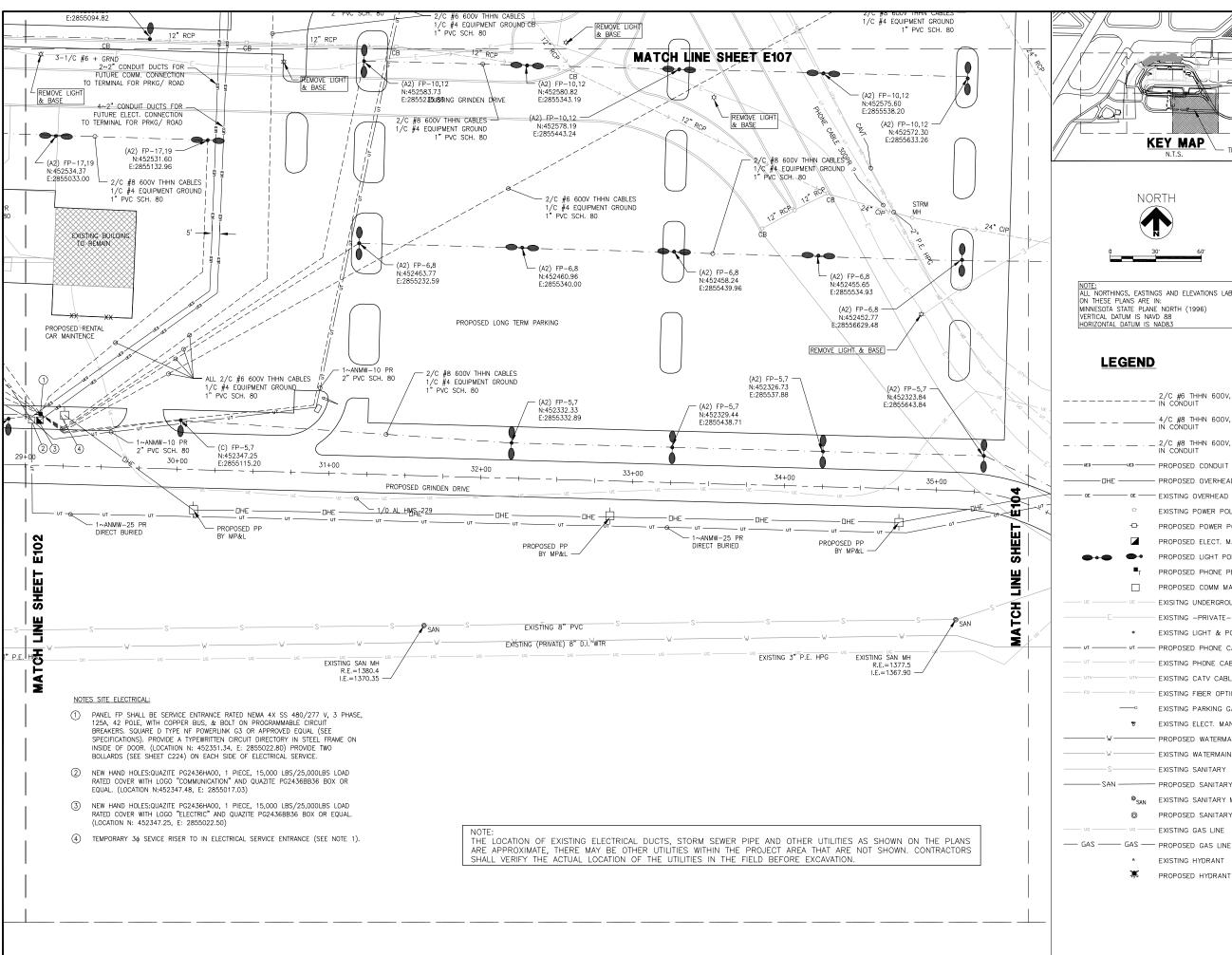
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SHEET TITLE

SITE ELECTRICAL **PLAN** (SHEET 2 OF 8)

SHEET NUMBER

E102





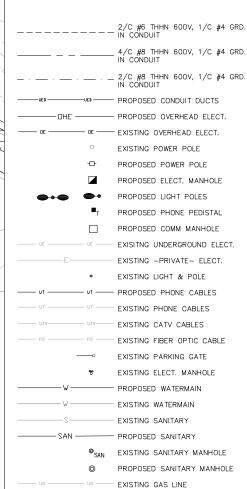


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ALL NORTHINGS, EASTINGS AND ELEVATIONS LABELED ON THESE PLANS ARE IN: MINNESOTA STATE PLANE NORTH (1996) VERTICAL DATUM IS NAVD 88 HORIZONTAL DATUM IS NADS.

LEGEND



EXISTING HYDRANT PROPOSED HYDRANT



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NO. DESCRIPTION DATE

Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

REVISIONS

DESIGNED BY:		BOA	
REVIEWED BY: DRAWN BY:		BCT LAD	
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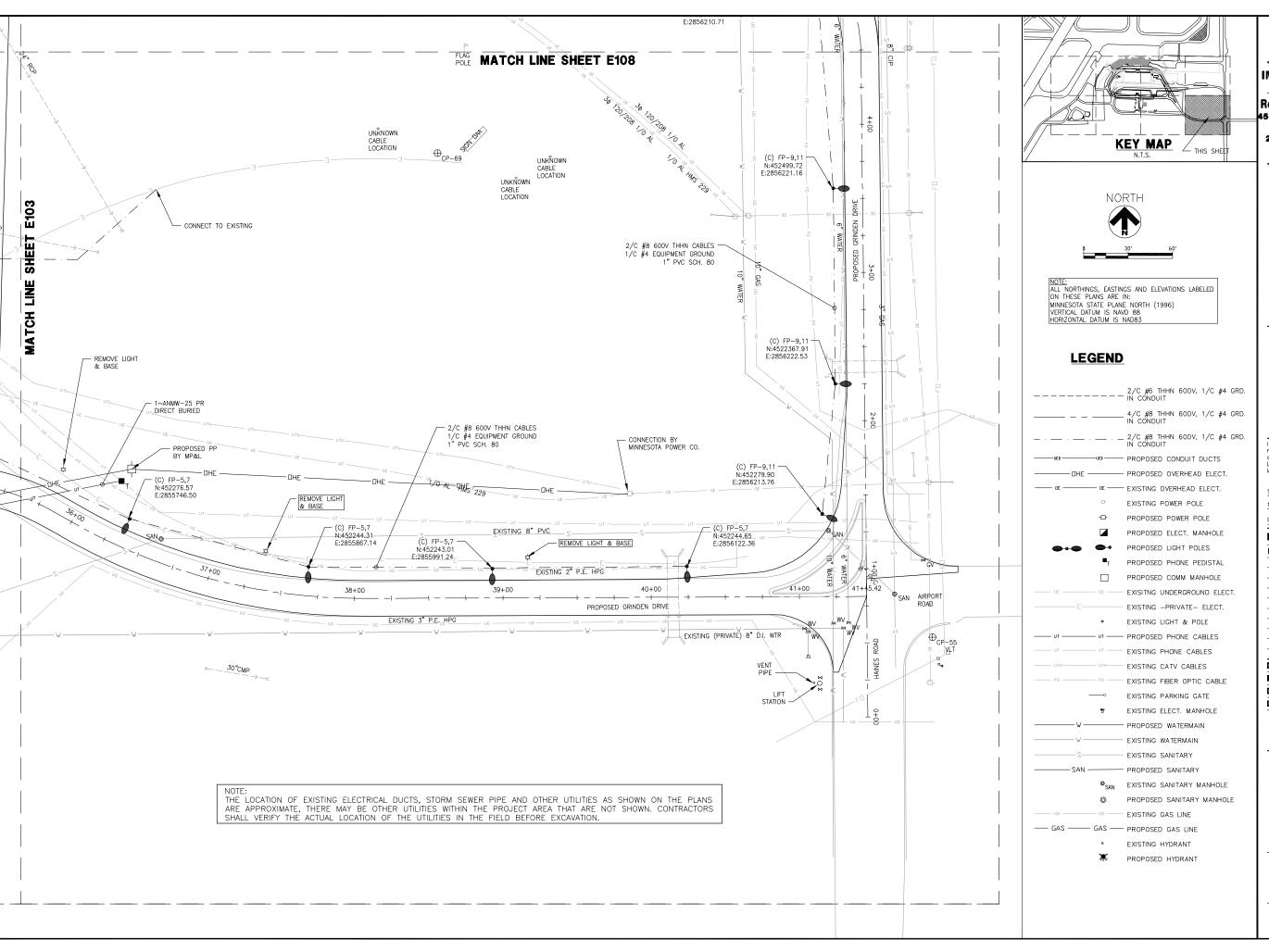
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SHEET TITLE

SITE ELECTRICAL PLAN (SHEET 3 OF 8)

SHEET NUMBER

E103



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Date 05/07/2009 Reg. No. 22088

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DATE ISSUED: 05-11-2009
REVIEWED BY: BCT

DRAWN BY: LAD DESIGNED BY: BOA

AEP PROJECT NUMBER

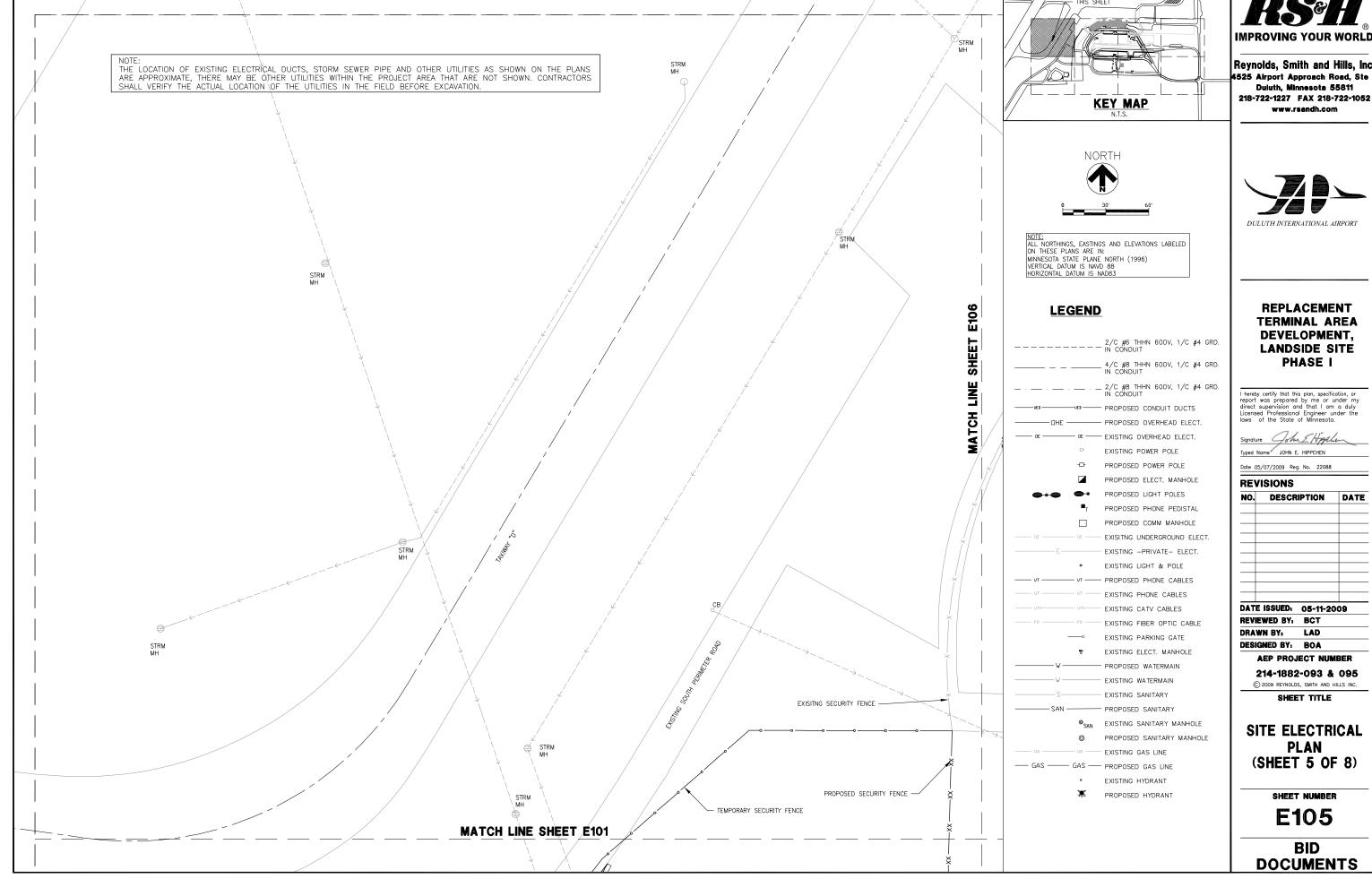
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SHEET TITLE

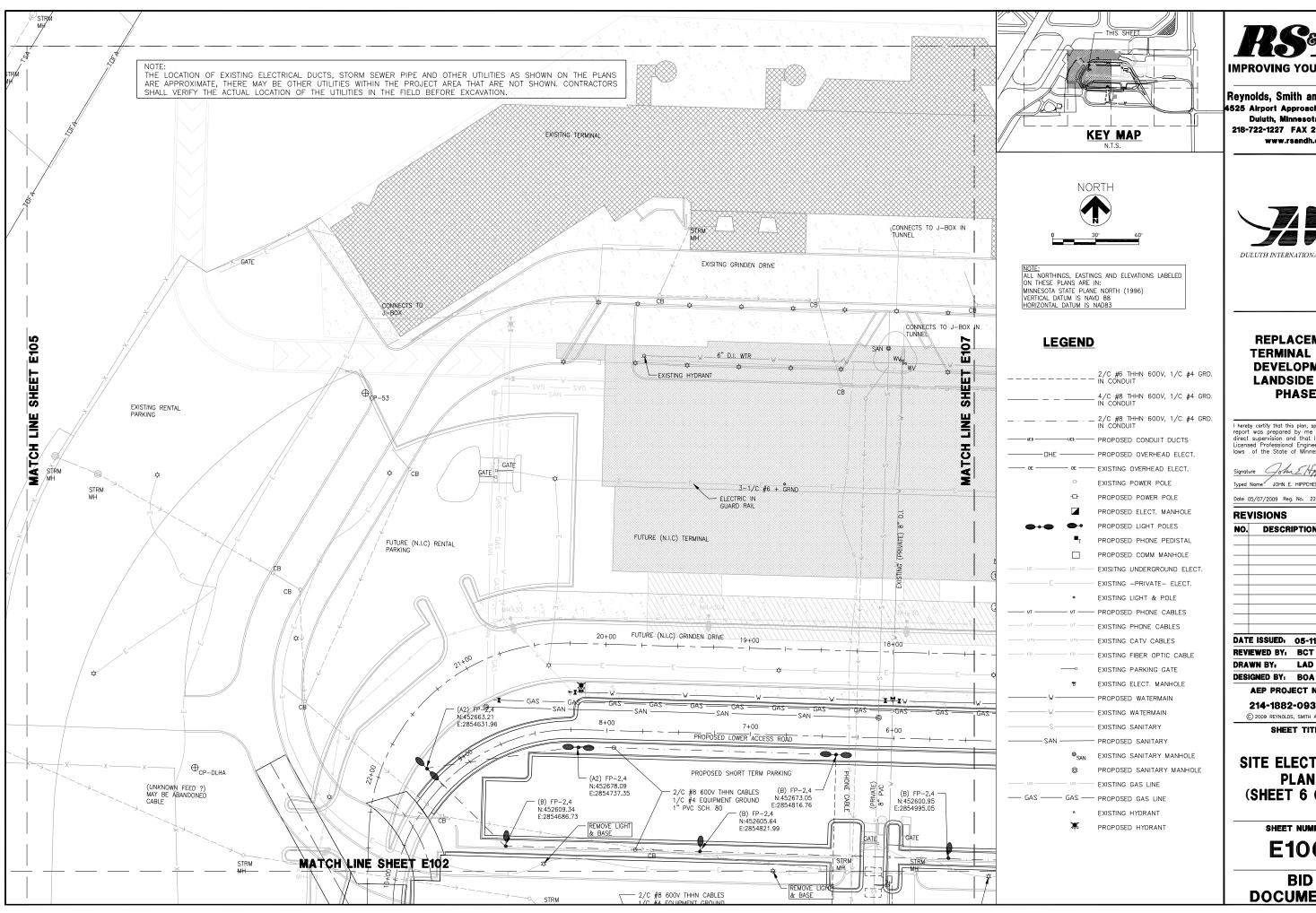
SITE ELECTRICAL PLAN (SHEET 4 OF 8)

SHEET NUMBER

E104



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Date 05/07/2009 Reg. No. 22088

DESCRIPTION DATE

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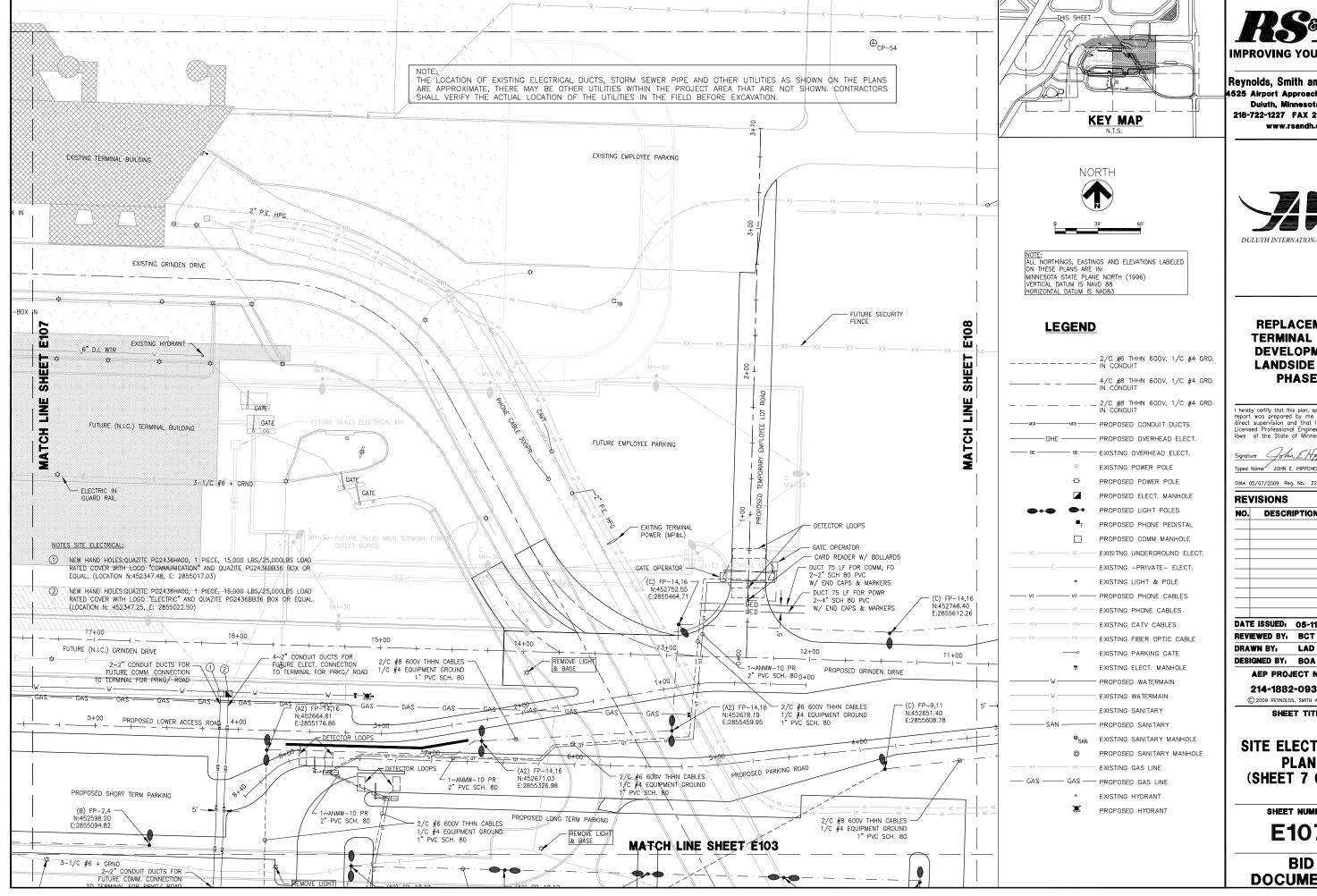
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SHEET TITLE

SITE ELECTRICAL **PLAN** (SHEET 6 OF 8)

SHEET NUMBER

E106





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AEP PROJECT NUMBER 214-1882-093 & 095

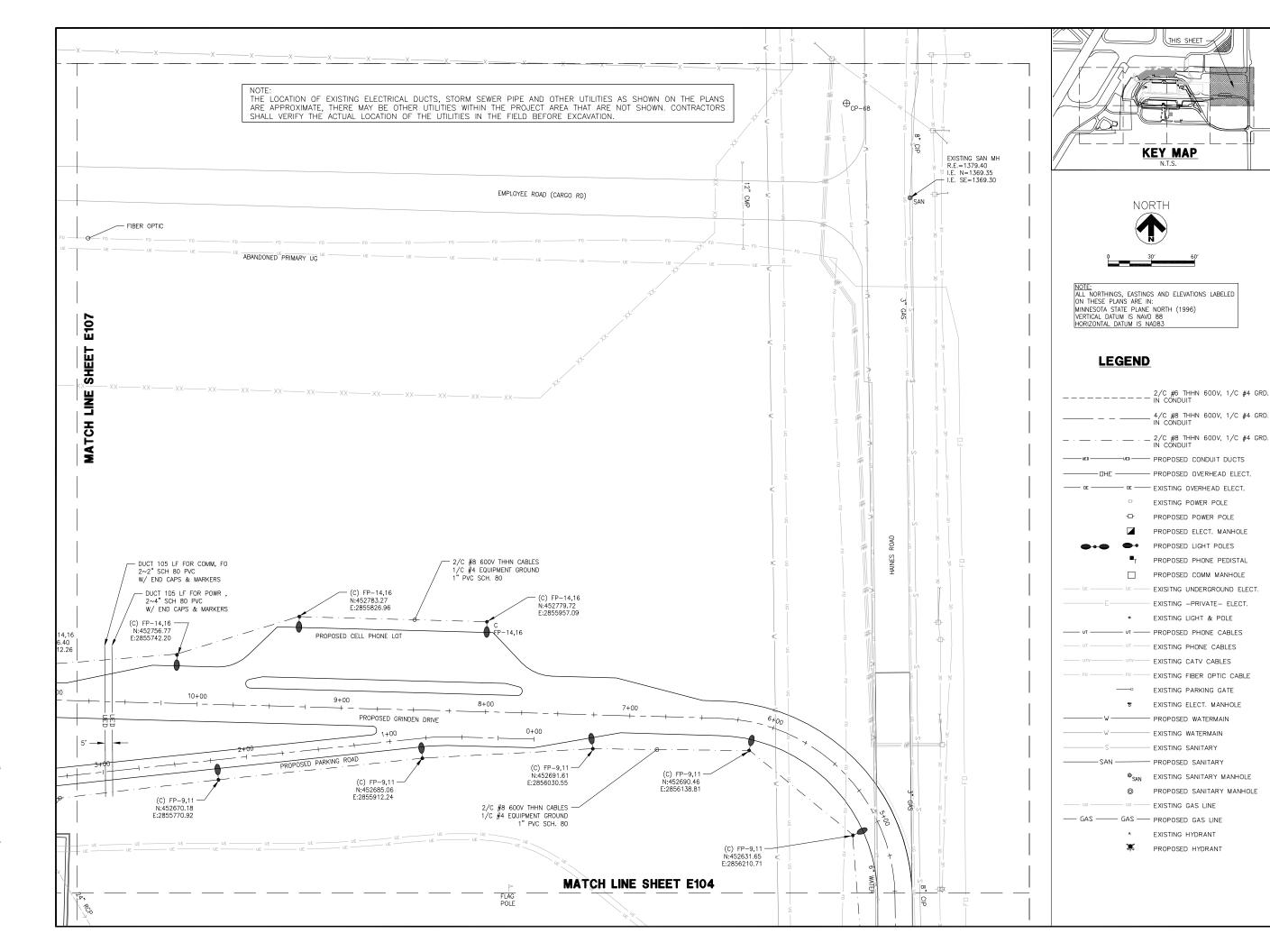
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SHEET TITLE

SITE ELECTRICAL **PLAN** (SHEET 7 OF 8)

SHEET NUMBER

E107







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Signa	ture	<	700	m	E Hopphe	in
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DATE

Date 05/07/2009 Reg. No. 22088

REVISIONS NO. DESCRIPTION

DATE ISSUED: 05-11-2009
REVIEWED BY: BCT

DRAWN BY: LAD
DESIGNED BY: BOA

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SHEET TITLE

PLAN
(SHEET 8 OF 8)

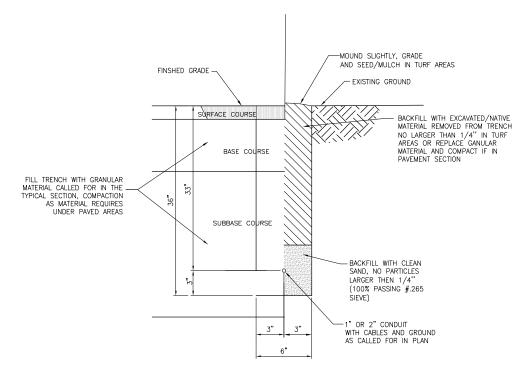
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E108



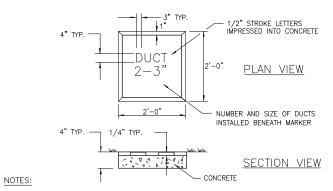
LIGHTING FIXTURE SCHEDULE NOTES:

- 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 COMPETED EDITED 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.



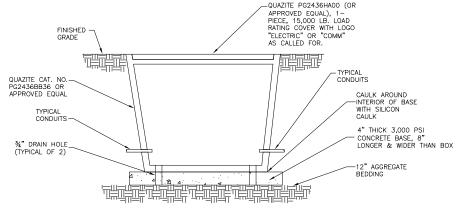


NOTE: FOR MULTIPLE CABLE CONDUIT TRENCHES, CONDUITS SHALL BE SEPERATED 2" MIN WIDEN TRENCH ACCORDINGLY.

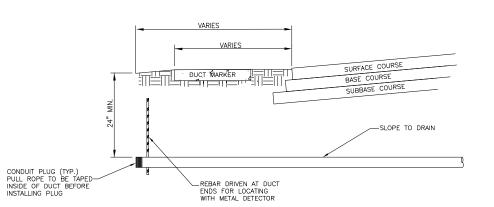


- 1. CONTRACTOR SHALL INSTALL NEW DUCT MARKERS WITH APPROPRIATE INFORMATION 5' OFF FDGF AND ON BOTH SIDES OF PAVEMENT WHEN EXISTING DUCT IS DISCOVERED OR NEW DUCT IS INSTALLED UNDER PAVEMENT.
- 2. EDGE EXPOSED CONCRETE WITH A "1/4" RADIUS TOOL.

DUCT MARKER DETAIL IN TURF 3 N.T.S.



ELECTRICAL HANDHOLE (IN TURF) 4 DETAIL



5 ELECTRICAL DUCT DETAIL

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REVIEWED BY: BCT					

DRAWN BY:

DESIGNED BY: BOA **AEP PROJECT NUMBER**

214-1882-093 & 095

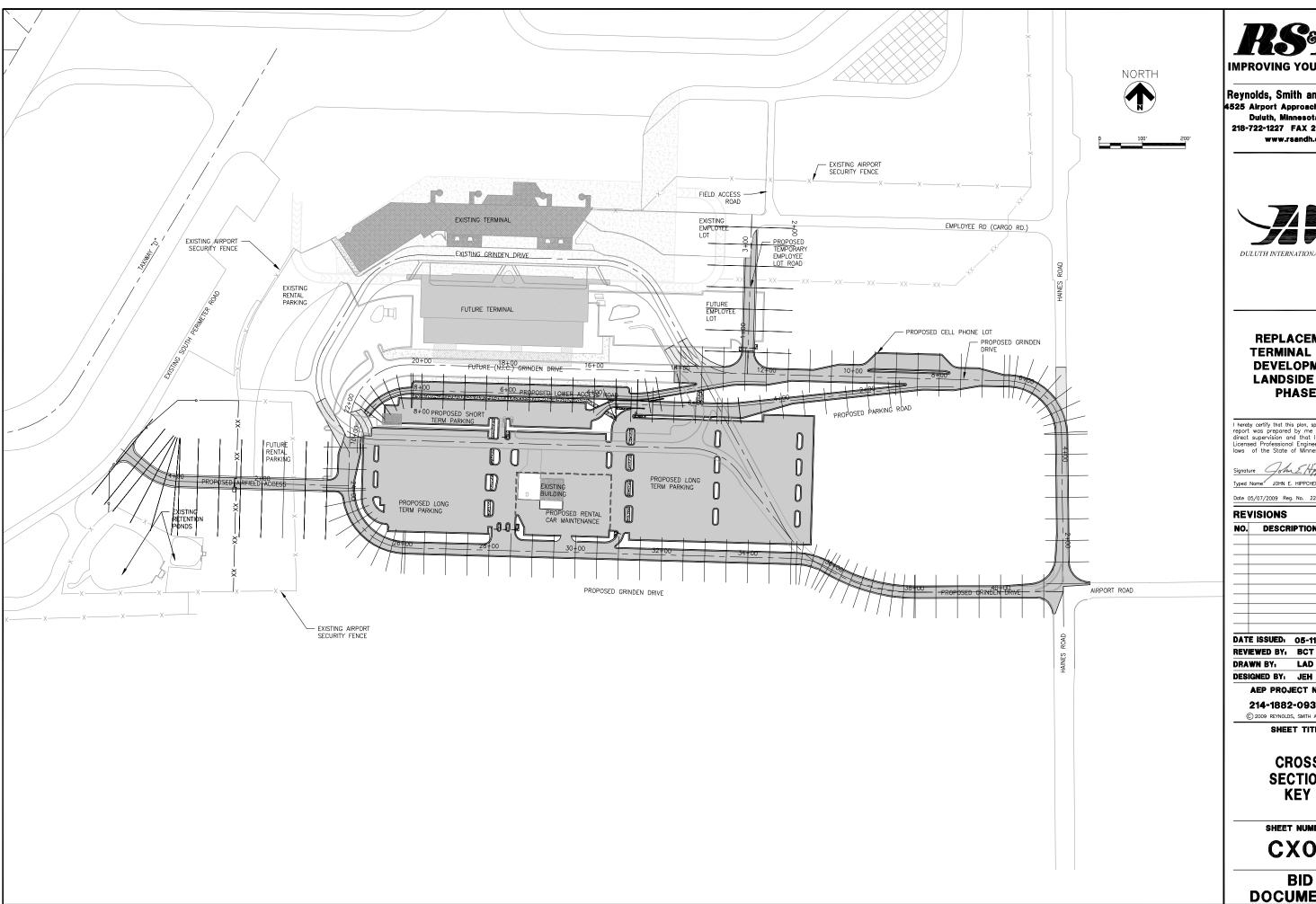
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SHEET TITLE

ELECTRICAL NOTES AND **DETAILS**

SHEET NUMBER

E400





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DATE ISSUED: 05-11-2009 REVIEWED BY: BCT DRAWN BY:

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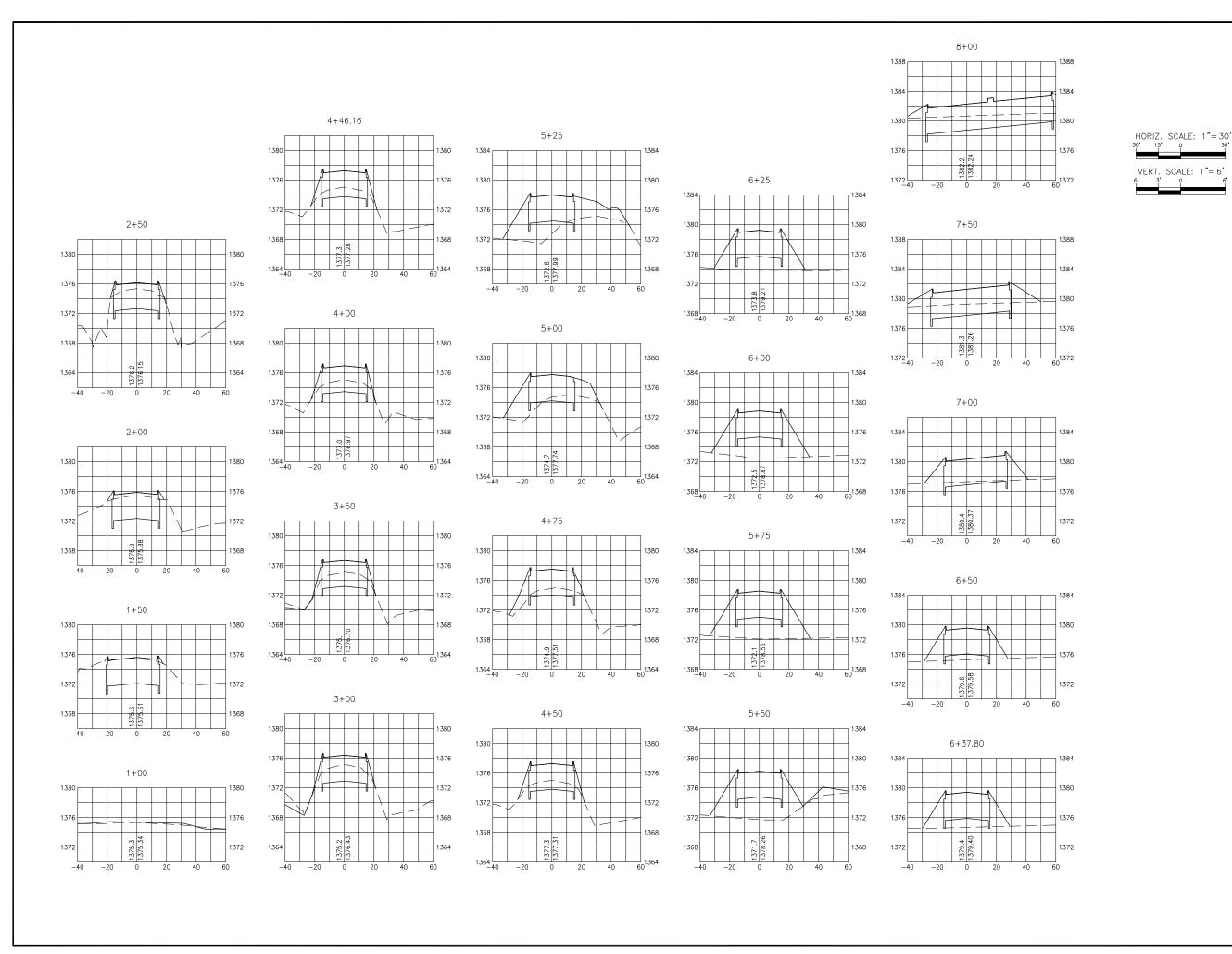
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CROSS SECTION KEY

SHEET NUMBER

CX01







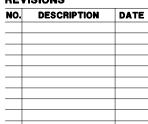
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DATE ISSUED: 05-11-2009
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DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER

214-1882-093 & 095

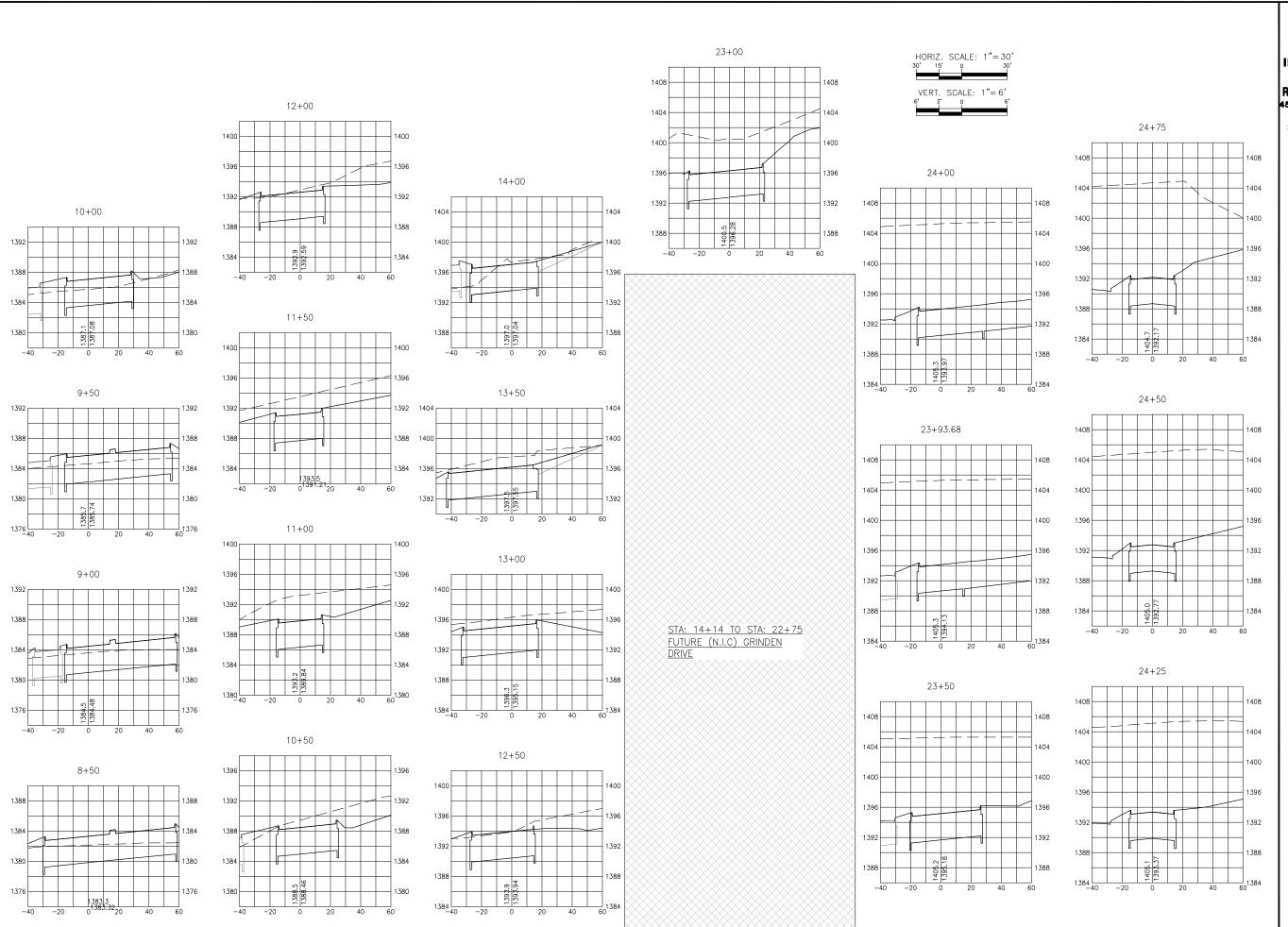
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SHEET TITLE

CROSS SECTIONS GRINDEN DRIVE STA: 1+00 TO STA: 8+00

SHEET NUMBER

CX02



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Typed Name JOHN E. HIPPCHEN

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DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER 214-1882-093 & 095

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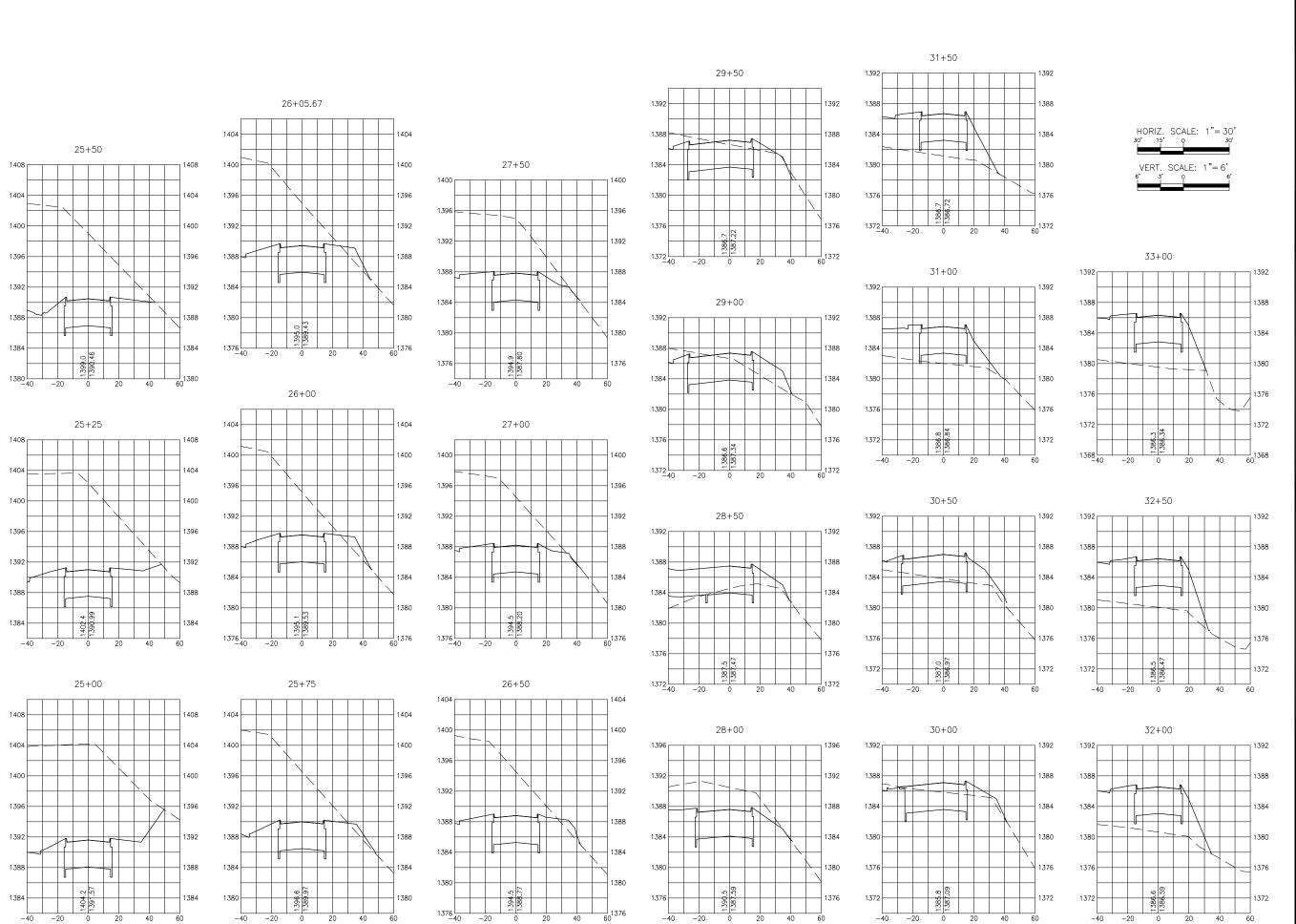
SHEET TITLE

CROSS SECTIONS
GRINDEN DRIVE
STA: 8+50 TO
STA: 24+75

SHEET NUMBER

CX03

BID Documents



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DATE ISSUED: 05-11-2009
REVIEWED BY: BCT

DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER 214-1882-093 & 095

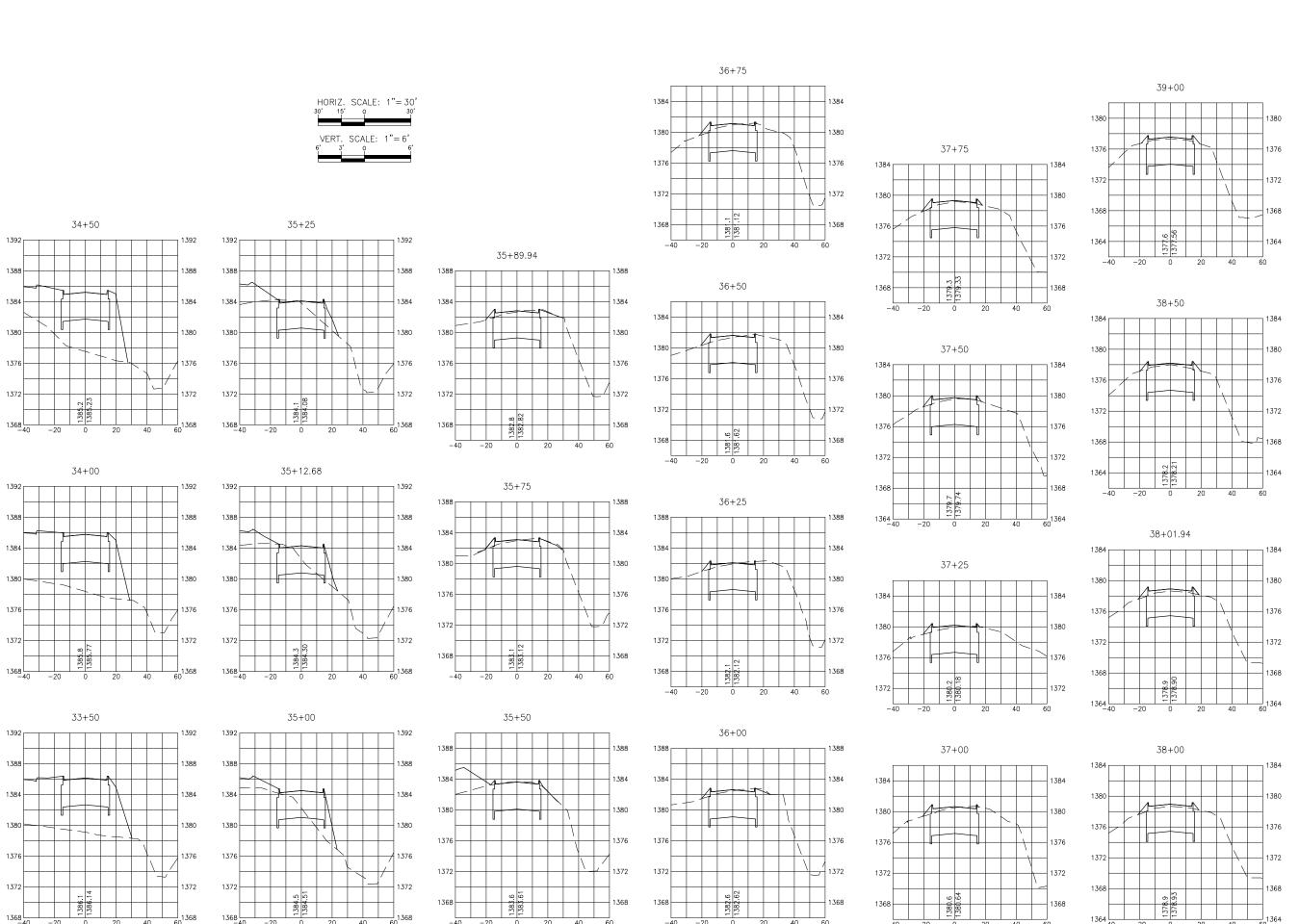
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SHEET TITLE

CROSS SECTIONS GRINDEN DRIVE STA: 24+75 TO STA: 33+00

SHEET NUMBER

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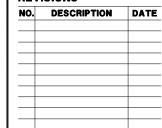
REPLACEMENT **TERMINAL AREA** DEVELOPMENT, LANDSIDE SITE PHASE I

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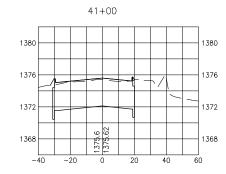
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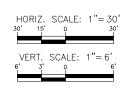
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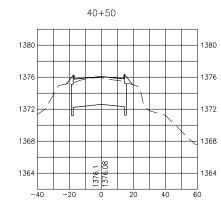
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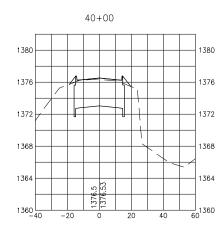
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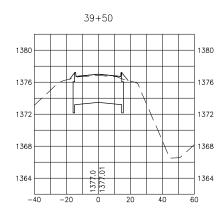
CX05

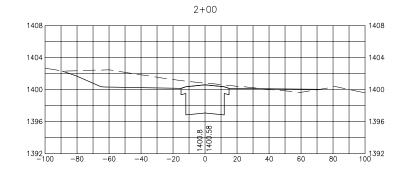


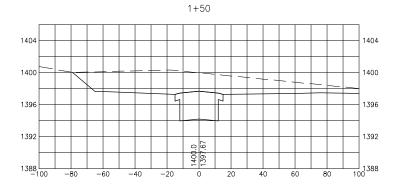


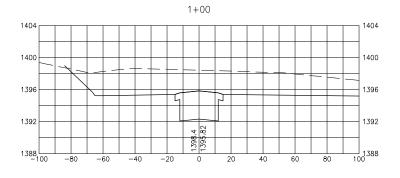


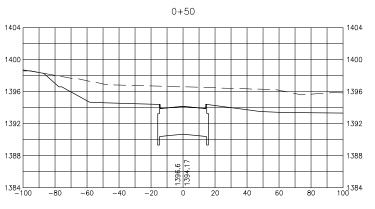


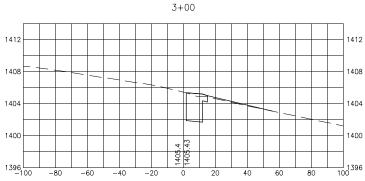


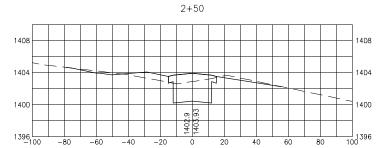
















REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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 under the laws of the State of Minnesota.

Signature John E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

REVISIONS

REVISIONS				
NO.	DESCRIPTION	DATE		

DATE ISSUED: 05-11-2009 REVIEWED BY: BCT

DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER

214-1882-093 & 095

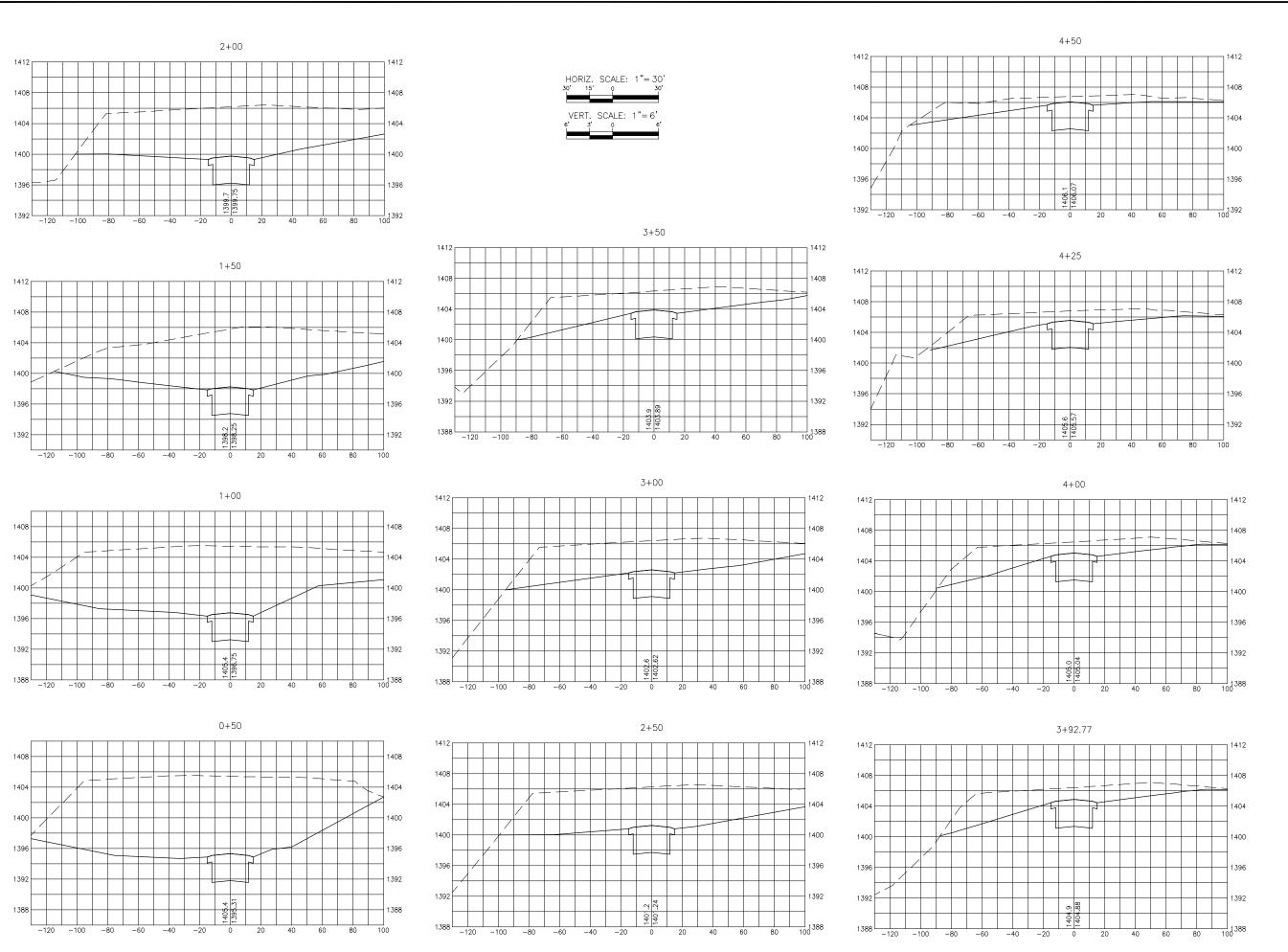
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SHEET TITLE

CROSS SECTIONS
GRINDEN DRIVE
STA: 39+00 - 41+00
EMPLOYEE ROAD
STA: 0+50 - 3+00

SHEET NUMBER

CX06







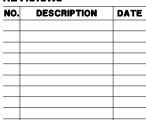
REPLACEMENT TERMINAL AREA DEVELOPMENT, LANDSIDE SITE PHASE I

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Signature John E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

REVISIONS



DATE ISSUED: 05-11-2009
REVIEWED BY: BCT

DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER

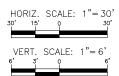
214-1882-093 & 095 © 2009 REYNOLDS, SMITH AND HILLS INC.

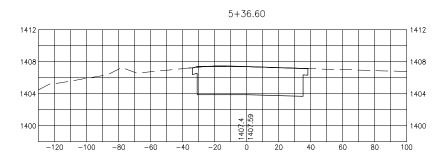
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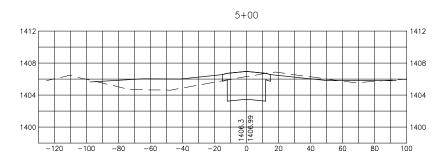
CROSS SECTIONS AIRFIELD ACCESS STA: 0+50 TO STA: 4+50

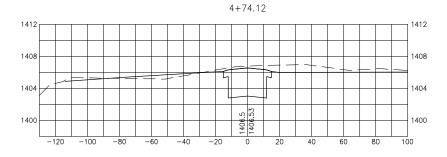
SHEET NUMBER

CX07













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Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

REVISIONS

NO.	DESCRIPTION	DAT

DATE ISSUED: 05-11-2009 REVIEWED BY: BCT

DRAWN BY: LAD
DESIGNED BY: JEH

AEP PROJECT NUMBER

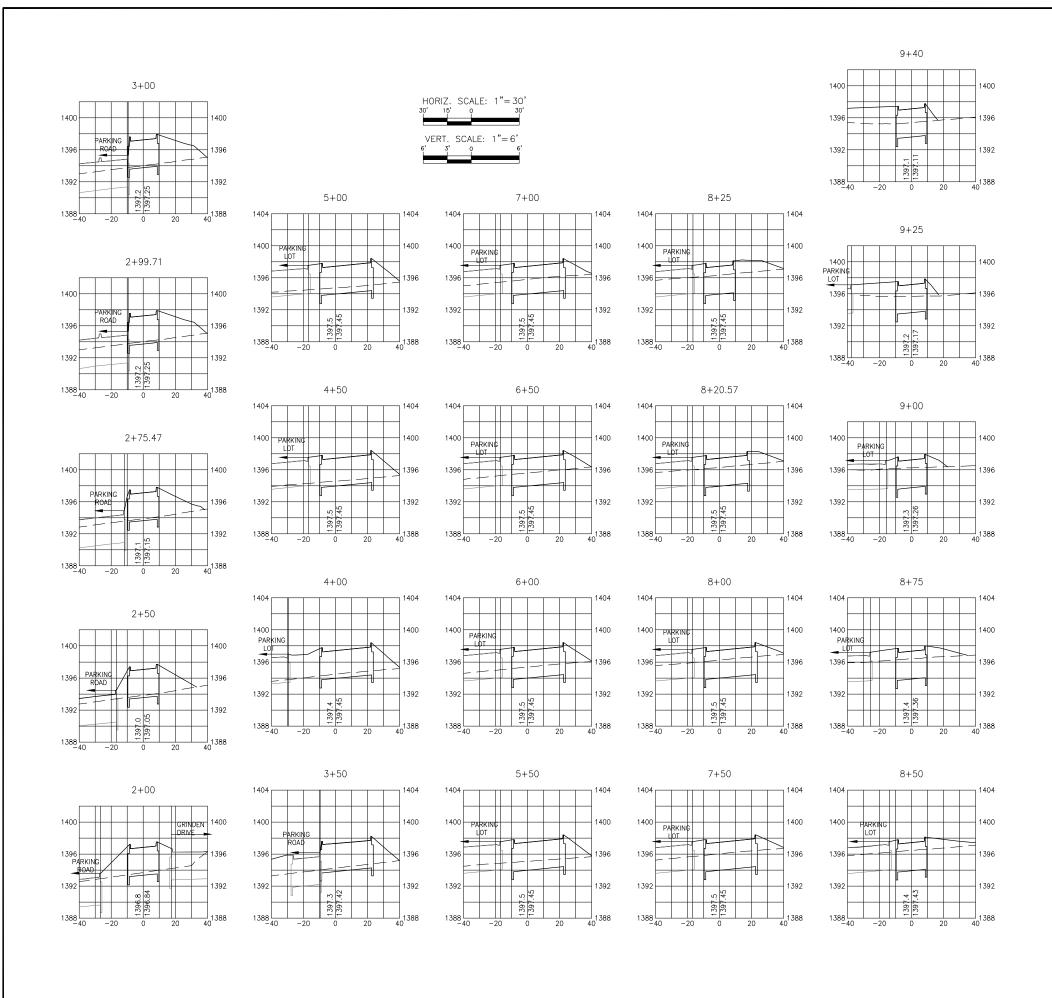
214-1882-093 & 095 © 2009 REYNOLDS, SMITH AND HILLS INC.

SHEET TITLE

CROSS SECTIONS AIRFIELD ACCESS STA: 4+74.12 TO STA: 5+36.60

SHEET NUMBER

CX08







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Typed Name JOHN E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

REVISIONS

NO.	DESCRIPTION	DATE		
	-			

DATE ISSUED: 05-11-2009

REVIEWED BY: BCT
DRAWN BY: LAD

DESIGNED BY: JEH

AEP PROJECT NUMBER

214-1882-093 & 095

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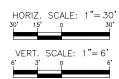
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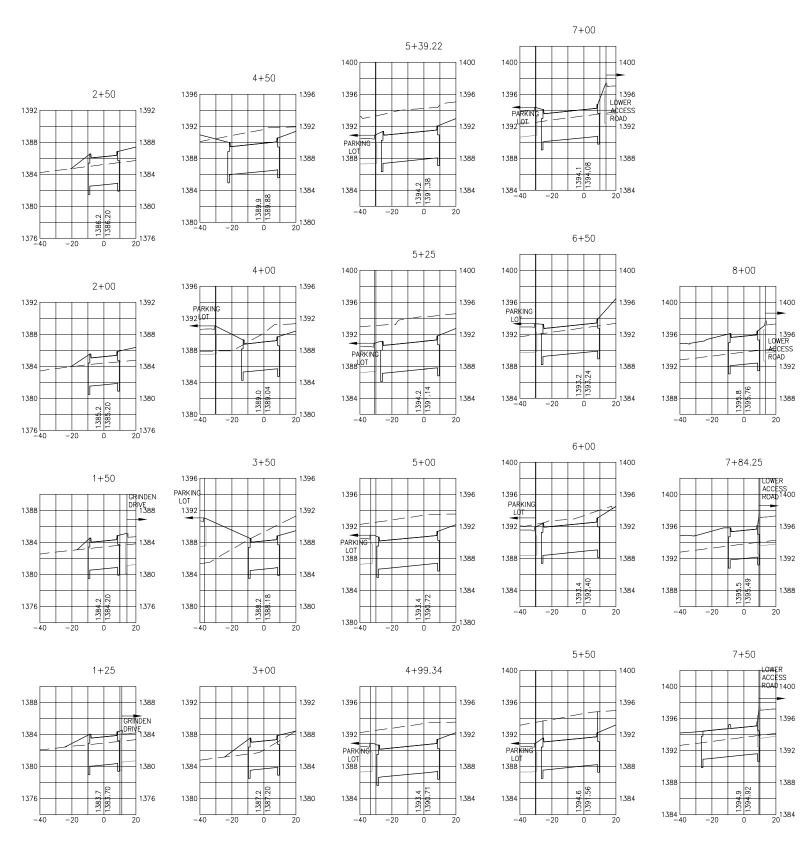
SHEET TITL

CROSS SECTIONS
LOWER ACCESS
ROAD
STA: 2+00 TO
STA: 9+40

SHEET NUMBER

CX09









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Signature John E. HIPPCHEN

Date 05/07/2009 Reg. No. 22088

REVISIONS

110 00000000000000000000000000000000000					
NO.	DESCRIPTION	DATE			

DATE ISSUED: 05-11-2009

REVIEWED BY: BCT
DRAWN BY: LAD

DESIGNED BY: JEH

AEP PROJECT NUMBER

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SHEET TITLE

CROSS SECTIONS
PARKING ACCESS
ROAD
STA: 1+25 TO
STA: 8+00

SHEET NUMBER

CX10