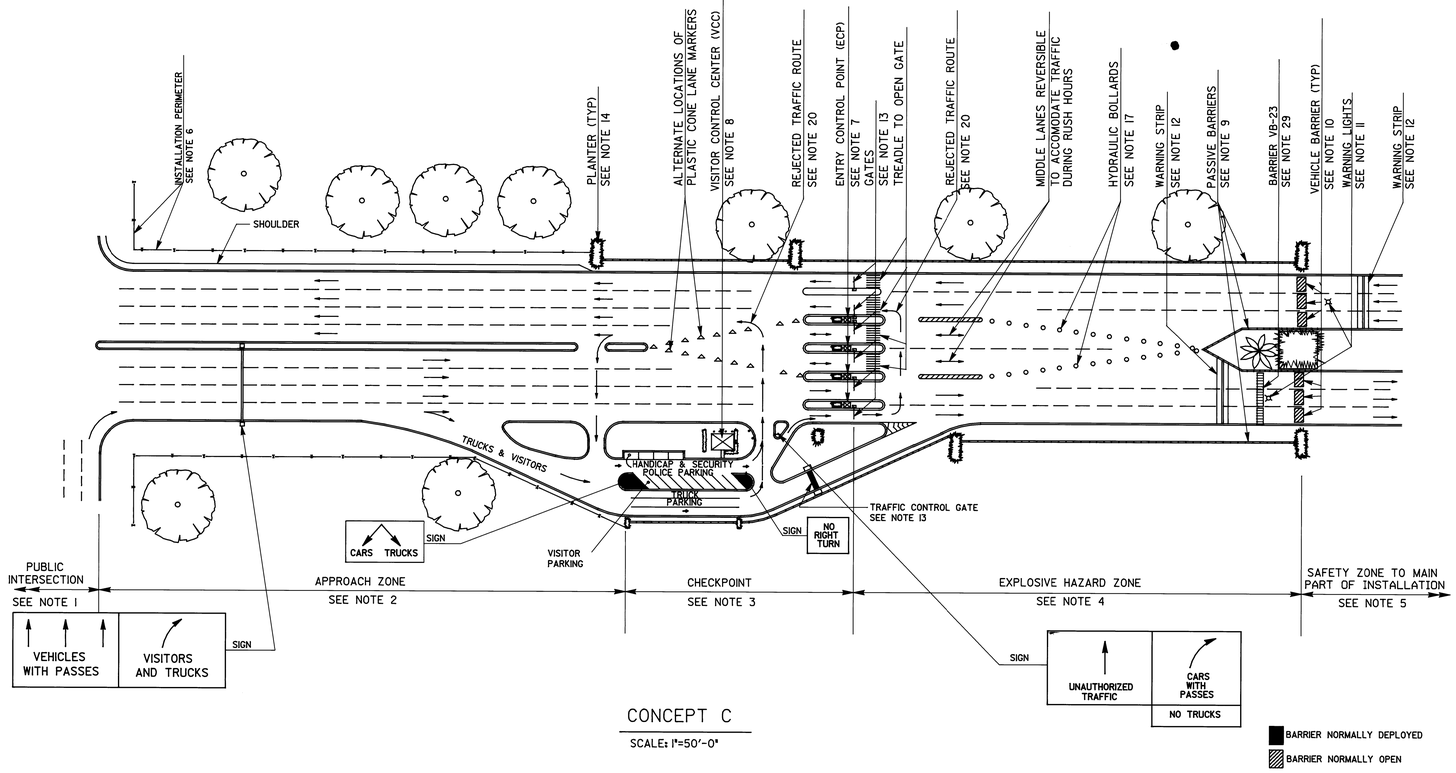


CONCEPT C

SCALE: 1"=50'-0"

CONCEPT C

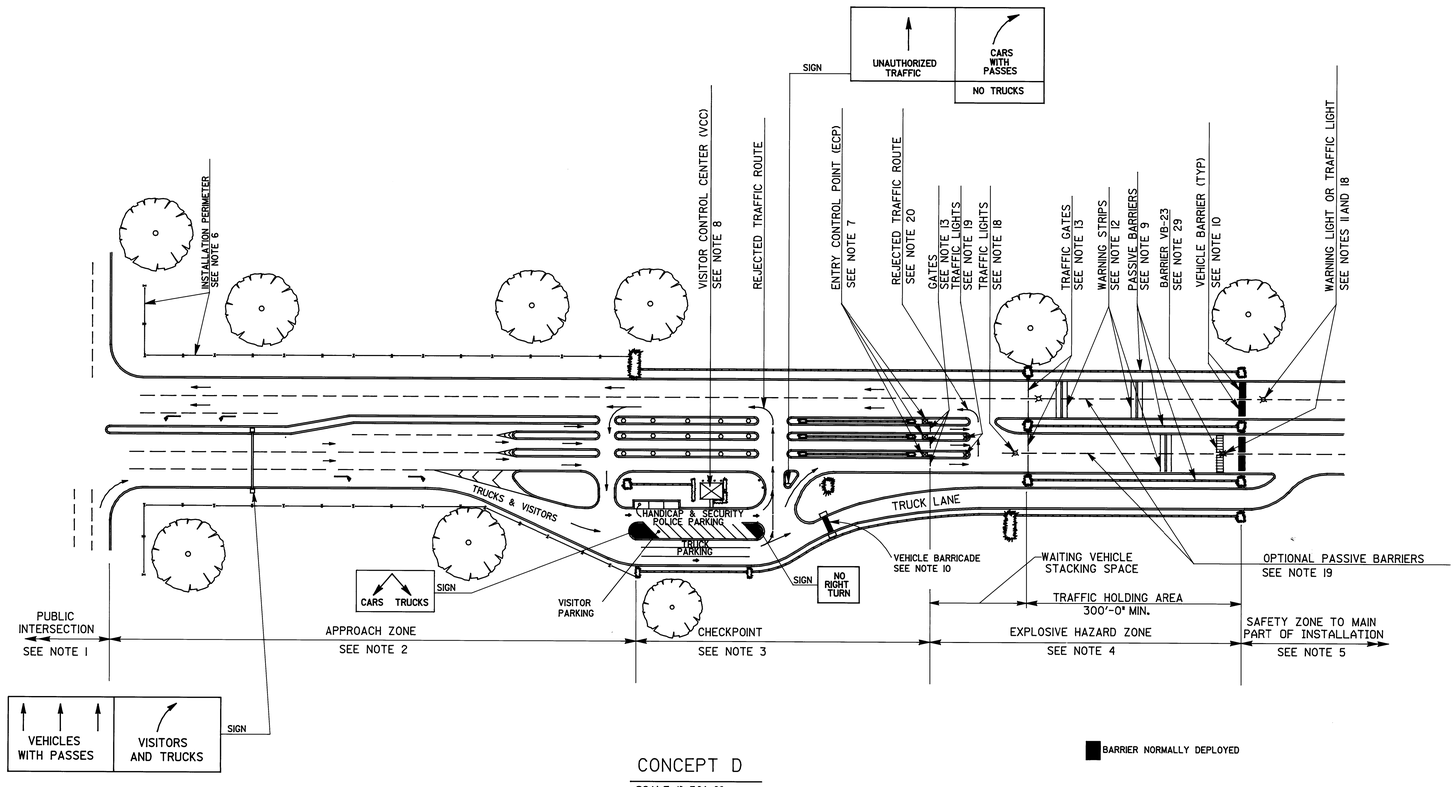
PREMISE: INCREASE FLOW OF TRAFFIC WITH MULTIPLE "TOLL BOOTH" TYPE CHECKPOINTS AND SOME LANES REVERSIBLE TO ACCOMMODATE THE RUSH HOUR TRAFFIC IN BOTH DIRECTIONS. VEHICLE BARRIERS ARE ACTIVATED WHEN A "TOLL BOOTH" GATE IS VIOLATED.

OPERATION: INCOMING TRAFFIC IS SEPARATED BY THOSE VEHICLES WITH OR WITHOUT PASSES. THOSE WITHOUT PASSES GO TO THE VCC FOR CLEARANCE. THOSE VEHICLES WITH PASSES USE MULTIPLE LANES WHICH EACH HAVE A TOLL GATE ACTIVATED BY THE GUARD IN THE ENTRY CONTROL POINT, CLOSED CIRCUIT TELEVISION , OR SOME OTHER DEVICE MONITORED FROM THE VISITOR CONTROL CENTER. THE VEHICLE BARRIERS ARE DEPLOYED BY GUARDS WHEN A TOLL BOOTH GATE ARM IS VIOLATED. TOLL BOOTH GATES ARE PROVIDED IN THE EXIT LANES TO ACTIVATE THE VEHICLE BARRIERS WHEN A FORCED ENTRY OCCURS VIA THE EXIT LANES. THE EXIT LANE TOLL GATES ARE AUTOMATICALLY RAISED ON DEMAND FOR EXITING VEHICLES. TO MAKE THE CENTER LANES REVERSIBLE, THE LANE MARKINGS MUST BE FLEXIBLE. ON THE PUBLIC SIDE OF THE CHECKPOINT, PLASTIC CONES OR SOME OTHER LOW COST METHOD MAY BE USED TO PROPERLY CHANNEL TRAFFIC. ON THE INSTALLATION SIDE OF THE CHECKPOINT, THE INCOMING AND EXITING LANES MUST BE SEPERATED BY A VEHICLE BARRIER, SUCH AS A ROW OF OPERABLE BOLLARDS.
OTHERWISE ALL VEHICLE BARRIERS MUST BE DEPLOYED WHEN A FORCED ENTRY OCCURS.

APPLICATION: THE CONCEPT IS APPLICABLE TO MANY DIFFERENT SITUATIONS BECAUSE OF ITS FLEXIBILITY IN MODIFYING THE NUMBER OF LANES.

LIMITATIONS: THE MULTIPLE LANES REQUIRE A LARGE NUMBER OF SECURITY PERSONNEL OR THE TECHNOLOGY TO REPLACE THEM. THE APPLICATION OF THIS CONCEPT WILL HAVE A MAJOR EFFECT UPON NORMAL TRAFFIC FLOW ENTERING AND EXITING THE INSTALLATION. PRIOR TO IMPLEMENTING THIS CONCEPT, A THOROUGH TRAFFIC ENGINEERING STUDY WILL BE REQUIRED.

SEE SHEETS 1-6 FOR ADDITIONAL NOTES



CONCEPT D

SCALE: 1"=50'-0"

CONCEPT D

PREMISE: ELIMINATE THE WINDOW OF VULNERABILITY OCCURRING WHEN THE VEHICLE BARRIERS ARE OPEN BY USING A TRAFFIC HOLDING AREA. THE TRAFFIC HOLDING AREA IS USED TO HOLD ENOUGH CARS TO BLOCK PASSAGE ALONG THE ROADWAY. THE TRAFFIC HOLDING AREA SHALL HOLD A LARGE NUMBER OF CARS TO MINIMIZE THE RESTRICTION TO FLOW DURING RUSH HOURS.

OPERATION: INCOMING VEHICLES FIRST CLEAR THE CHECK-POINT AREA AND THEN ENTER THE TRAFFIC HOLDING AREA. THE VEHICLE BARRIERS AT THE END OF THE TRAFFIC HOLDING AREA ARE DEPLOYED, BLOCKING PASSAGE TO ALL INCOMING TRAFFIC. WHEN ENOUGH CARS ARE IN THE TRAFFIC HOLDING AREA TO PREVENT AN AGGRESSOR FROM FORCING HIS WAY DOWN THE ROAD. THE TRAFFIC GATES AT THE BEGINNING OF THE TRAFFIC HOLDING AREA ARE CLOSED AND THE VEHICLE BARRIERS ARE OPENED. WHILE THE TRAFFIC HOLDING AREA EMPTIES, TRAFFIC WILL BACK UP BEHIND THE TRAFFIC GATES FORMING A NEW BARRIER AGAINST THE AGGRESSORS. WHEN THE TRAFFIC HOLDING AREA IS EMPTY OF VEHICLES, THE BARRIERS ARE CLOSED, THE TRAFFIC GATES ARE OPENED, AND THE TRAFFIC ADVANCES TO THE VEHICLE BARRIERS TO REPEAT THE PROCESS. OUTGOING TRAFFIC GOES THROUGH A SIMILAR PROCESS WHEN LEAVING THE BASE. IF AN AGGRESSOR FORCES HIS WAY PAST THE TRAFFIC GATES, THE VEHICLE BARRIERS WOULD BE IMMEDIATELY CLOSED TO LIMIT THE ADVANCE OF THE AGGRESSOR. DURING PERIODS OF HEAVY TRAFFIC, THE SAME EFFECT MAY BE ACHIEVED BY USING ONLY THE TRAFFIC LIGHTS TO LIMIT TRAFFIC MOVEMENT. INCOMING TRUCKS AND VISITORS USE A SEPARATE LANE AT THE CHECKPOINT TO AVOID TYING UP A NORMAL LANE OF TRAFFIC. VISITORS AND TRUCKS MAY REJOIN THE NORMAL FLOW OF TRAFFIC IN THE TRAFFIC HOLDING AREA OR USE AN OPTIONAL LANE BYPASSING THE TRAFFIC HOLDING AREA. THIS SEPARATE LANE MAY ALSO BE USED BY EMERGENCY VEHICLES. IF ADDITIONAL PASSIVE BARRIERS ARE USED TO SEPARATE ALL LANES OF TRAFFIC, THE TRAFFIC GATE AND VEHICLE BARRIERS IN EACH LANE MAY BE OPERATED INDEPENDENTLY OF THE GATES AND BARRIERS IN THE OTHER LANES. THIS METHOD WILL PROVIDE GREATER FLEXIBILITY DURING VARIOUS LEVELS OF TRAFFIC.

APPLICATION: THIS CONCEPT REQUIRES A LONG DISTANCE BETWEEN THE CHECKPOINT AND THE MAIN PART OF THE INSTALLATION.

LIMITATIONS: THE MULTIPLE LANES REQUIRE A LARGE NUMBER OF SECURITY PERSONNEL OR THE TECHNOLOGY TO REPLACE THEM. THE APPLICATION OF THIS CONCEPT WILL HAVE A MAJOR EFFECT UPON NORMAL TRAFFIC FLOW ENTERING AND EXITING THE INSTALLATION. PRIOR TO IMPLEMENTING THIS CONCEPT, A THOROUGH TRAFFIC ENGINEERING STUDY WILL BE REQUIRED.

SEE SHEETS 1-6 FOR ADDITIONAL NOTES

GENERAL NOTES (CONT)

17. LANE CONTROL - THE VEHICLE BARRIERS MUST BE OPERATED IN ONE OF TWO METHODS. ALL FOUR BARRIERS MAY BE OPERATED TOGETHER IF A VEHICLE VIOLATES THE CHECKPOINT. THIS OPERATION WOULD PREVENT AN AGGRESSOR FROM FORCING HIS WAY THROUGH THE EXIT LANES AND THEN AVOIDING THE VEHICLE BARRIERS IN THE EXIT LANES BY WEAVING TO THE LEFT TO SLIP BY THE BARRIERS IN THE ENTRY LANES. IF OPERABLE BOLLARDS OR A SIMILAR TYPE OF VEHICLE BARRIER WERE USED TO PROVIDE A POSITIVE BARRIER TO KEEP VEHICLES FROM SWITCHING FROM EXIT TO ENTRY LANES, ONLY THE TWO VEHICLE BARRIERS ON THE VIOLATED SIDE WOULD HAVE TO BE ACTIVATED. THE POSITIVE BARRIER COULD ALSO BE A DETECTION DEVICE SUCH AS A LIGHT BEAM TO DETECT WHEN A VEHICLE CROSSES OVER. IN THAT EVENT THE SECOND SET OF BARRIERS WOULD HAVE TO BE ACTIVATED.

18. TRAFFIC LIGHTS - THESE TRAFFIC LIGHTS MAY BE USED TO CONTROL THE FLOW OF TRAFFIC DURING RUSH HOURS INSTEAD OF THE BARRIERS. DURING RUSH HOUR TRAFFIC, IT IS ASSUMED THAT THE VOLUME OF TRAFFIC WILL BE ADEQUATE TO PREVENT AN AGGRESSOR FROM FORCING HIS WAY PAST LINES OF VEHICLES ON A NARROW ROAD. A TRAFFIC STUDY WILL DETERMINE NECESSITY FOR INSTALLING TRAFFIC SIGNALS

19. LANE DIVIDERS - ADDITIONAL PASSIVE BARRIERS MAY BE USED TO SEPARATE INDIVIDUAL LANES OF TRAFFIC. WHEN LANE DIVIDERS ARE USED, ONLY ONE VEHICLE BARRIER WOULD HAVE TO BE ACTIVATED, THUS PERMITTING TRAFFIC TO FLOW ON ALL OTHER LANES. LANE DIVIDERS ALSO MAKE IT POSSIBLE TO CLOSE LANES DURING OFF HOURS WHEN THE TRAFFIC IS VERY LIGHT.

20. WHEN VISITORS DENIED ADMISSION TO THE INSTALLATION MUST CROSS SEVERAL LANES OF INCOMING TRAFFIC, THEY WILL REQUIRE ASSISTANCE TO BE ABLE TO QUICKLY EXIT FROM THE ACCESS POINT, ESPECIALLY DURING RUSH HOUR TRAFFIC. THIS ASSISTANCE MAY BE PROVIDED IN SEVERAL WAYS:
   a. SECURITY PERSONNEL WORK TOGETHER TO PRORERLY DIRECT TRAFFIC.
   b. TRAFFIC LIGHTS ARE USED TO STOP NORMAL TRAFFIC WHILE THE VISITOR LEAVES.
   c. TRAFFIC GATES ARE USED TO STOP NORMAL TRAFFIC.

21. RADAR DETECTION EQUIPMENT - RADAR ANTENNAS MAY BE MOUNTED ON A VERTICAL STANDARD, IN AN OVERHEAD STANDARD OR ABOVE THE ECP. THE RADAR DEVICE MUST BE CAREFULLY AIMED TO DETECT THE SPEED OR DIRECTION IN A SINGLE LANE. THE ANTENNA MAY NEED TO BE RECESSED IN A HOUSING TO REDUCE THE BEAM WIDTH.

22. TRAFFIC CONTROL GATES - THESE GATES ARE NORMALLY OPEN. WHEN THE SPEED/DIRECTION DETECTORS IDENTIFY AN IMPROPER APPROACH, THE GATES IN THOSE LANES WILL CLOSE. IF THE GATES ARE FORCED, THE ONCOMING VEHICLE WILL HAVE DECLARED THE INTENT TO FORCE AN ENTRY.

23. ACCESS CONTROL - THE ENTRY CONTROL POINT MAY BE SUPPLEMENTED WITH OR REPLACED BY A CARD READER SYSTEM OR TV CAMERA TO CONTROL ACCESS. A CARD READER SYSTEM WOULD BE CONTROLLED BY A SMALL COMPUTER AND COULD BE SET UP TO MONITOR AND CONTROL BASE ENTRY THROUGH THE USE OF ACCESS CARDS. THE TV CAMERA WOULD BE MONITORED BY PERSONNEL IN THE VISITOR CONTROL CENTER. SEE SHEET 7 FOR FURTHER INFORMATION.

24. OVERHEAD OBSTRUCTION - AN OVERHEAD OBSTRUCTION MAY BE USED TO SEPARATE TRUCKS FROM AUTOMOBILES BASED UPON THE AMOUNT OF HEADROOM EACH VEHICLE NEEDS TO PASS UNDER AN OBSTRUCTION. THIS OBSTRUCTION OR PORTAL MAY ALSO BE USED TO MOUNT SIGNS, TRAFFIC LIGHTS, AND ENTRY CONTROL EQUIPMENT.

25. SIRENS, AIR HORNS, FLASHING LIGHTS, ETC. SHOULD BE USED AS ALARM DEVICES WHEN AN ILLEGAL ENTRY IS DETECTED.

26. SUBSURFACE VEHICLE BARRIERS ARE DESIGNED FOR AASHTO HS20-44 LOADING (TRACTOR TRUCK WITH SEMITRAILER). WEIGHT LIMIT SIGNS WILL THEN BE REQUIRED AT ECP'S WITH SUBSURFACE BARRIERS ON INSTALLATIONS WHERE HEAVY EQUIPMENT TRANSPORTERS OPERATE. IN THESE CASES OVERALL DESIGN CONSIDERATION MUST INCLUDE ALTERNATE ACCESS FOR THESE VEHICLES.

27. SIDEWALKS - SIDEWALKS FOR PEDESTRIANS MAY BE PROVIDED ON ONE OR BOTH SIDES OF THE GATE ROADWAY. THEIR NECESSITY AND PROCEDURE FOR I.D. CHECKS SHALL BE DETERMINED BY THE INSTALLATION SECURITY PLANNERS.

28. MONITORING EQUIPMENT - VIDEO AND COMMUNICATION EQUIPMENT SHALL BE PROVIDED TO MONITOR VEHICLE BARRIER AREA TO ENABLE GUARD PERSONNEL TO MAINTAIN VISUAL ASSESSMENT OF SUSPECT VEHICLE AND RENDER INSTRUCTIONS.

29. BARRIER - A RETRACTABLE BARRIER (EX. VB-23) MAY BE INSTALLED AHEAD OF THE VEHICLE BARRIER TO INHIBIT THE SUSPECT VEHICLE FROM BACKING OUT OF THE CONTAINMENT AREA, AND SHOULD BE LOCATED TO ALLOW ONE(1) VEHICLE CONTAINMENT.

30. PROTECTED POSITION - PROTECTED POSITIONS SHOULD BE PROVIDED, AS REQUIRED, TO ALLOW GUARDS TO RETURN THE FIRE OF ANY ATTACKER. PROTECTED POSITIONS SHOULD SUPPLEMENT PLANTERS WHICH ALSO ARE USED AS PROTECTED POSITIONS.

31. SECURITY POLICE PARKING-SECURITY PLANNERS MAY ALTER THE DESIGN TO ALLOW BACK-IN (COMBAT) PARKING OF POLICE VEHICLES FOR QUICKER RESPONSE IN AN EMERGENCY SITUATION.

Symbol	Description	Date	Approved
1	GENERAL REVISIONS - SHEET REDRAWN	27 FEB 89	AF

Revisions

U.S. ARMY ENGINEER DIVISION, HUNTSVILLE
CORPS OF ENGINEERS
HUNTSVILLE, ALABAMA

Site adapt A/E :

US Army Corps of Engineers

ENTRY POINTS FOR U.S. ARMY INSTALLATIONS

CONCEPTS C & D

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