HIGHWAY REGULATION

Senior Transportation Officer Qualification Course
Highway Regulation

Motivator

In this lesson, you will learn about the Army's primary mode of transportation within a theater, military truck transport, and how Highway Regulation exercises control through movement control channels.

Highway Regulation involves planning, routing, scheduling, and deconflicting the use of routes to facilitate movement control.

It seeks to provide order, prevent congestion, and enforce movement priorities. This free flow of traffic allows for the maximum movement of cargo and personnel.

As a Senior Transportation Officer, your foreknowledge and application of Highway Regulation concepts and principles, which are designed to follow a process of planning, routing, scheduling, and deconflicting the use of road networks to facilitate movement, will help you and others accomplish transportation missions.

In this lesson, you will learn about Highway Regulation from the perspective of a commander having area jurisdiction.

Commanders must ensure that convoys are deconflicted and coordinated. Movement control personnel are tasked with carrying out this responsibility.

HIGHWAY REGULATION

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Lead-in

LEAD-IN

The goal of Highway Regulation planning is to sustain movements according to the commander's priorities and make the most effective and efficient use of the road networks. It requires synchronization and coordination with planners of unit movement and maneuver.

In 2003, the Army's Chief of Transportation, Major General Brian I. Geehan, directed combat developers at the Army Combined Arms Support Command to standardize Movement Control Teams (MCTs) by merging the functions and capabilities of the previous four specialized designs into a modular and multifunctional team able to perform all movement control functions at any node or in any geographical area.

Those specialized designs included:

- The port and area MCTs
- The division support MCT
- The Movement Regulating Team (MRT)
- The Cargo Documentation Team (CDT)

The new, modular MCTs will be assigned to the Theater Sustainment Command (TSC) and attached to Movement Control Battalions (MCBs) to decentralize execution of movement responsibilities on an area basis or at essential transportation nodes.

The redesign of the Movement Control Team resulted in the modular Movement Control Team, a 21-Soldier team (one captain, two first lieutenants, and 18 enlisted personnel) created with the capability to perform every type of movement control mission.

This multifunctional, modular unit will be better able to support the Army Chief of Staff's intent to create a modular "brigade-based" Army that is more responsive to the regional combatant commanders' needs, facilitates force packaging and rapid deployment, and operates as self-contained units on the nonlinear, noncontiguous battlefield.

HIGHWAY REGULATION

This is the Main Menu for the Highway Regulation lesson.

This lesson will include information about the purpose of the Highway Regulation process, Movement Control principles and procedures, Planning, Routing, and Scheduling.

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Movement Plan

Found within a movement plan is a main supply route (MSR) check point list.

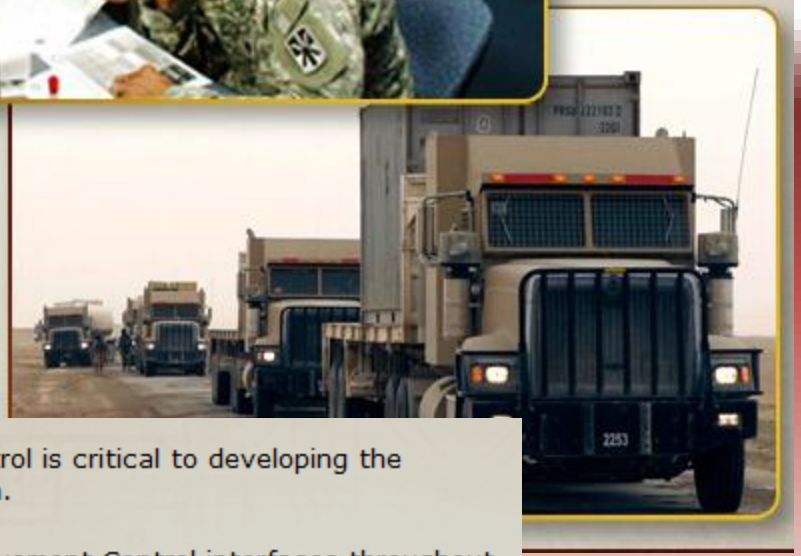
Movement Control personnel and customers can use this information to identify what path to use from origin to destination and to identify segment numbers for use in requesting movement bids and receiving movement credits.

Movement planners must identify check points (CPs) along the route to control movements.

Planners, when coordinating movement bids, must be able to visualize the location of convoys at any time and know when they should arrive and clear CPs.

Immediate requirements are generated on short notice from clearance requests (movement bids).

The MCT assists in Highway Regulation by forwarding movement bids and providing technical advice to units in movement planning.



Movement Control is critical to developing the distribution plan.

Establishing Movement Control interfaces throughout the distribution structure, movement programming, and Highway Regulation are all critical to ensuring success of the theater distribution plan.

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Review of Transportation Elements

In the previous lessons, you learned that the U.S. Army transportation system is comprised of three distinct elements:

- Mode operations (highway, rail, water, and air)
- Terminal operations
- Movement Control

Area Control of vehicular traffic is carried out by using movement clearances according to Highway Regulation and the Traffic Circulation Plan (TCP).

Highway Regulation is planned by the Division Transportation Officer (DTO) for the division rear area, the Corps Movement Control Battalion (MCB) for the corps rear area, and the Transportation Command Element (TCE) for theater.

It is supervised by Movement Regulating Teams (MRTs) assigned to the Echelons Above Corps (EAC) and Corps Movement Control Battalions, and by the Military Police (MP) for traffic control.

Previously, you learned that the United State Army transportation system is comprised of three distinct elements: Mode operations (highway, rail, water, and air); Terminal operations; and Movement Control.

Of these three elements, you have also learned that Movement Control is the most critical component of the transportation system.

Area control, which is exercised through Movement Control channels, is known as Highway Regulation.

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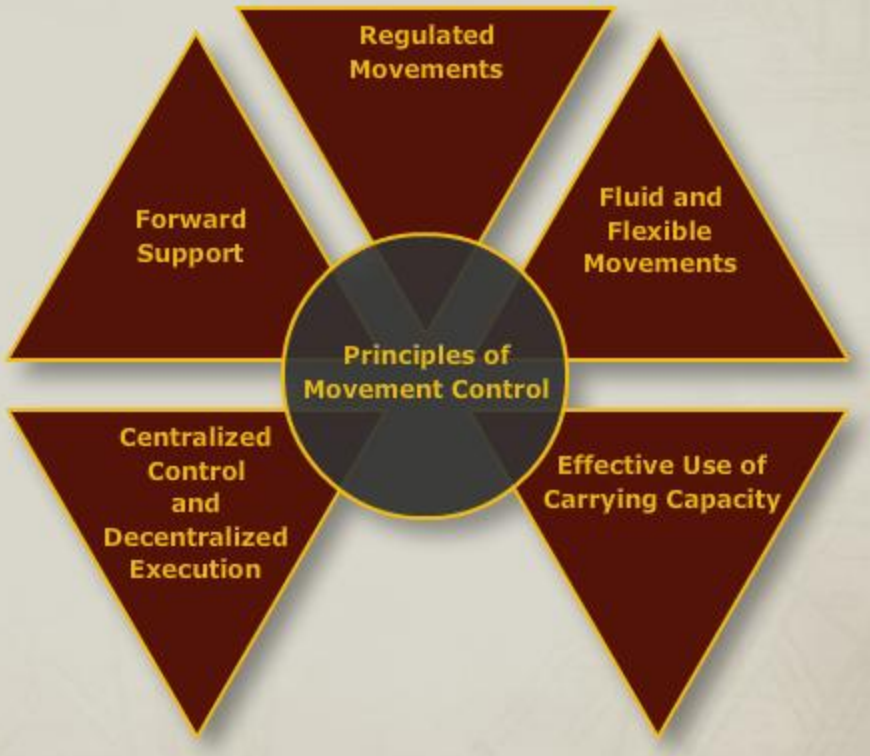
Basic Movement Control Principles

In the earlier lesson "Movement Control Organizations", you were taught these basic Movement Control principles:

- Centralized control and decentralized execution: Enhance flexibility, prioritize support, and accomplish missions.
- Regulated movements: Prevents a free-for-all on routes, so units and supplies move along routes in an orderly fashion.
- Fluid and flexible movements: Use every available route or mode to increase flexibility and responsiveness.
- Effective use of carrying capacity: Make the best use of your available assets.
- Forward support: Support forward to provide maximum responsiveness to the maneuver commander.



These principles guide the Senior Transportation Officer on how to address known problems and those yet to be overcome.

These basic Movement Control principles guide the Senior Transportation Officer on how to address anticipated Movement Control and Highway Regulation issues, and possible future problems.

HIGHWAY REGULATION

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Definitions

Highway Regulation is a process by which movement control personnel perform the planning, routing, scheduling, and control of personnel and cargo movements over lines of communication.

Highway Regulation purpose is to:

- Ensure order
- Prevent congestion
- Support command priorities
- Preclude any adverse effects on the environment

Control of vehicular traffic is carried out by using clearances according to two documents produced during the planning process: the Highway Regulation Plan (HRP) and the Traffic Circulation Plan (TCP).

These plans include directives, regulations, overlays, and estimates concerning control of Main Supply Routes (MSRs).

Regulation Plan

A Highway Regulation Plan is a staff plan that is included in the Operations Plan (OPLAN) or Operations Order (OPORD).

It describes the utilization of the highway network, control measures, and other routing and scheduling information.

Hwy Regulation

The Highway Regulation function consists of planning, routing, and scheduling, of ground traffic to deconflict the use of highways and facilitate movements. It provides order, prevents congestion, and enforces movement priorities.

The extent of regulation required depends upon the number of planned or anticipated movements, the routine level of immediate requirements, and the capacity of the road networks.

The following activities perform the Highway Regulation mission:

- Transportation Command Element (TCE) and Movement Control Battalion (MCB) at Echelons Above Corps (EAC)
- MCB (corps) in the corps rear area
- Division Transportation Officer (DTO) in the division rear area
- Brigade S4 in the brigade rear area

Highway Regulation is a process by which movement control personnel perform the planning, routing, scheduling, and control of personnel and cargo movements over lines of communication.

Highway Regulation is designed to: ensure order; prevent congestion; support command priorities; and preclude any adverse effects on the environment.

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Synchronization of Movement

To ensure that these four purposes of Highway Regulation are understood, we must appreciate the need for synchronization of movement.

The three components that must be in synch are:

- Movement Control: key ingredient to an effective logistics system.
- Battlefield Circulation Control (BCC): compliments movement control by ensuring everything moves smoothly on the MSR.
- Maneuver: exercised by the G-3 for units committed to the battle.

Now that we know the purpose of Highway Regulation and the importance of movement synchronization in movement planning, let's take a look at the process involved in Highway Regulation development.

Movement Control is a component of movement synchronization.

These three components must be in synch like a fine watch: Movement Control; Battlefield Circulation Control; and Maneuver.

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Process

The Highway Regulation process follows a sequence of events that ensures the proper execution of the overall Highway Regulation mission.

This process includes:

- Planning
- Routing
- Scheduling / deconflicting
- Managing use of Main Supply Routes (MSRs)

Mission, enemy, troops, terrain, time available, and civilian considerations (METT-TC) drive the specific planning factors and influence how vehicular movement is controlled.

Regardless of the mission, the process of planning and organizing vehicular movement is the same. Mission, enemy, troops, terrain, time available, and civilian considerations (METT-TC) drive the specific planning factors and influence how vehicular movement is controlled.

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Key Points

The following key points regarding Movement Control principles and Highway Regulation concepts were discussed:

- Review of Transportation elements
- Movement Control principles
- Definitions
- Process

KEY POINTS

The following key points regarding Movement Control principles and Highway Regulation concepts were discussed: Review of Transportation elements, Movement Control principles, Definitions, and Process.

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Quick Challenge

QUICK CHALLENGE

_____ is a process by which movement control personnel perform the planning, routing, scheduling, and control of personnel and cargo movements over lines of communications.

Select the best answer and then select Submit.

A. Convoy Organization

B. Operational Security

✓ C. Highway Regulation

D. Mobilization Control

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First Step

The first step in the planning process is to answer key questions and assemble information, such as:

- What truck units will support the Area of Operation (AO)?
- What are their capabilities?
- What routes are available?
- Where are the terminal facilities?
- Where are **First Destination Reporting Points** (FDRPs)

Highway regulators / movement planners must also understand OPLANS to the extent that they fully grasp the commander's intent.

There are several key questions that must be answered when planning begins.

Forward Support Battalions usually operate First Destination Reporting Points at intersections of brigade rear boundaries and main or alternate supply routes.

First Destination Reporting Points

First Destination Reporting Points (FDRPs) are points established near a boundary or along an MSR that diverts drivers and cargo to an alternate consignee or destination.

The FDRP is manned by a movement regulating team, a movement control team, or military police.

FDRP tasks:

- Track the location of critical supplies
- Perform movement control functions
- Provide instructions to convoys
- Provide and receive latest intelligence
- Reroute convoys/vehicle
- Provide information on routes and weather
- Establish brigade "light line" for black-out driving
- Provide a linkup point for armed convoy escort vehicles

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Highway Regulation Planning

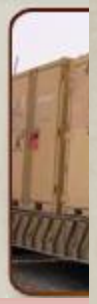
The goal of Highway Regulation planning is to sustain movements according to the commander's priorities and make the most effective and efficient use of the road networks.

It requires synchronization and coordination with planners of unit movement and maneuver.

Planning is done in a logical sequence and results in the publication of the Highway Regulation Plan (HRP) and the Traffic Circulation Plan (TCP).

The next step in the planning process is to assemble critical information. This information can be found in:

- Operation plans (OPLANs), operation orders (OPORDs), and estimates
- Engineer route reconnaissance or classification overlays
- Traffic Density information
- Terminals and facilities data



Highway regulators and movement planners must understand Operation Plans to the extent that they fully grasp the commander's intent.

Traffic Density is defined as the anticipated traffic volume on a given route.

It is important to know the location of facilities and terminals so that you can ensure easy access to main supply routes. Knowing the capabilities of these terminals will help in determining times and minimizing conflicts.

You must also determine where First Destination Reporting Points will be located or where they have already been established within their respective geographical area.

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Planned vs. Immediate Requests

Planned movement requirements are identified in advance and are found in distribution plans, movement programs, and operation plans / orders.

They involve onward movement of forces from ports of debarkation (PODs), movement of supplies and equipment, and movement of units.

Immediate requirements are unplanned and based on requirements generated during the conduct of operations.

They include requirements such as unit displacement, unprogrammed resupply, and evacuation.

Immediate requirements are unanticipated or urgent ground force requirements and priority transportation requests that, once validated, may be passed on as immediate airlift requests.

Planned request requirements are identified in both the Deliberate Planning Process and the Execution Planning Process.

Immediate requirements are generated on short notice from clearance requests (movement bids).

Movement controllers must quickly determine if air, rather than ground transport, is the most effective mode based on the urgency of the requirement and characteristics of the personnel, supplies, and equipment to be moved.

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Identify Road Networks

Once you have collected all your information, the next step in the planning process is to identify the road networks.

This Main Supply Route (MSR) selection process:

- Must support anticipated traffic volume
- Will normally select the most viable routes
- Must be extendable to support forward movement of maneuver forces
- Must include alternate routes (in case the MSR is closed)
- Includes recommendations by the Movement Planner
- Must be Approved by the G-3 / G-4

Remember the MSR must be approved by the G-3 before any detailed Highway Regulation planning can be developed.

When the data is assembled and studied, movement planners must identify the road networks that are capable of supporting the volume of traffic necessary to meet planned and anticipated movement requirements.

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MSRs

Main Supply Routes (MSRs) are routes designated within the Combat Support Brigade (CSB) Maneuver Enhancement (ME), or higher headquarters area of operations, upon which the bulk of sustainment traffic flows in support of operations.

Supply routes are selected in coordination with the Brigade Sustainment Battalion (BSB) support operations officer and CSB (ME) S-3.

The following are characteristics of MSR establishment:

- DTO selects division MSRs
- Brigade (BDE) S-4, in coordination with S-3, selects supply routes
- SPO MUST have input into BDE supply route selection as they know vehicle types and capabilities
- Overlays should include primary, alternate, and "dirty" or contaminated routes
- Reflects current road and bridge information

A main supply route is selected based on the terrain, friendly disposition, enemy situation, and scheme of maneuver.

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Planning Sequences

These are the eight steps in the road network or MSR planning process.

- Name each MSR in accordance with the unit naming convention (ALL CAPS, no colors or numbers)
- Determine critical points
- Establish checkpoints
- Establish control measures
- Develop a **Traffic Circulation Plan**
- Write the **Highway Regulation Plan**
- Establish reporting instructions
- Staff and coordinate

NOTE: Doctrine dictates that colors and numbers will not be used to name MSRs. MSR names must follow a theme that is normally published in an SOP.

Planning sequences provide order, prevents congestion, and enforces movement priorities.

The goal is to sustain movements according to the commander's priorities and to make the most effective and efficient use of the road networks.

Traffic Circulation Plan

The Traffic Circulation Plan is an overlay of the MSR network, which shows all MSRs/ASRs, checkpoints, highway regulation points, route names, direction of travel, boundaries, and principal supply activities.

Highway Regulation Plan

The Highway Regulation Plan describes the MSR network and establishes control measures to promote effective regulation.

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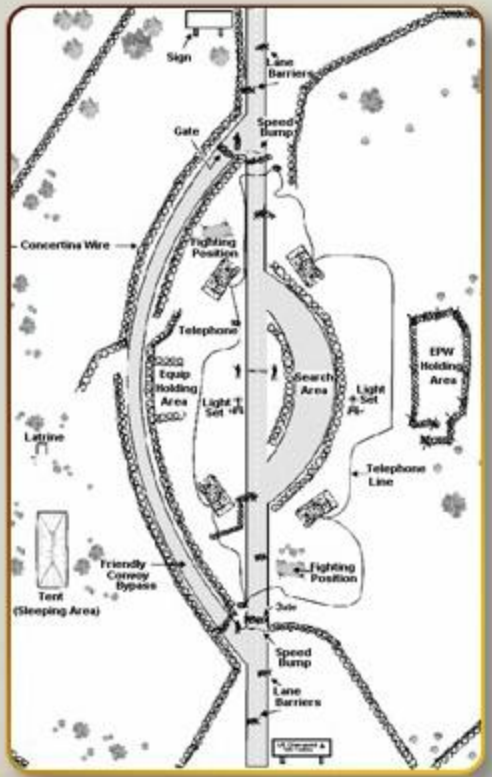
Critical Points and Check Points

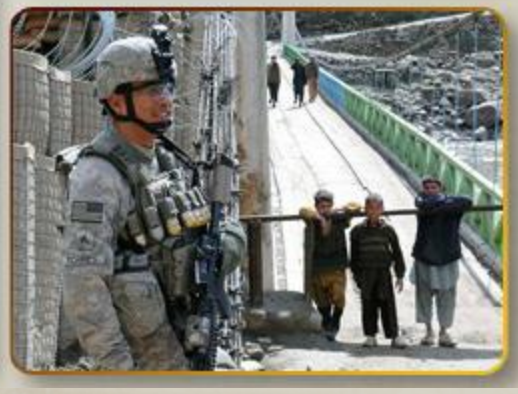
Critical points are areas of interest to movement planners because they represent possible major impediments that could affect the traffic flow and include:

- Bridges, tunnels, overpasses, and underpasses (possible bottlenecks)
- Roadway structures / features that limit road width, overhead clearance, or vehicle military load classifications
- Crossroads where misdirection or miscommunication could occur
- Adverse surface conditions, construction, steep grades, or sharp turns

Check points (CPs) are established to segment the MSR in manageable blocks where points serve as a means of:

- Controlling route movement
- Controlling supply depot or terminal access
- Establishing geographic boundaries





Critical points are identified by movement planners where a major bottleneck could occur, a crucial route direction change occurs, or to identify a possible dangerous area to traverse.

Check points are established to maintain access control or manage the flow of traffic into manageable blocks of distance.

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Control Measures

Highway Regulation planners establish control measures to ensure order and prevent congestion. One method used to establish control is classifying MSRs and alternate supply routes (ASRs).

These classifications are based mainly on the ability of a route to support the expected traffic volume and types of vehicles that are to use the route.

They also specify the degree of control required and whether moving units must submit a convoy clearance request to use a route.

The five control measures for Highway Regulation planning are:

- **Open Route**
- **Supervised Route**
- **Dispatch Route**
- **Reserved Route**
- **Prohibited Route**

Controlling traffic in an area of operations is difficult even under the best of conditions, as there are always competing demands for the available road network.

Units cannot expect to be able to use all routes without requesting permission.

Control measures should be based on the engineer route classifications, planned and anticipated traffic volume, METT-TC, and critical points.

HIGHWAY REGULATION

Open Route

The route is open to all types of traffic and the moving unit does not need to submit a movement bid to use the route. Minimum control is exercised.

Supervised Route

The route is open to most types of traffic. The movement control headquarters specifies the size of convoys, the type of traffic, or characteristics of vehicles that require a movement credit to use the route. Limited control is exercised.

Dispatch Route

Full control is exercised over a dispatch route. A convoy clearance is required for the movement regardless of the number or types o vehicles.

A dispatch route is normally designated when traffic volume is expected to exceed capacity or when the route is critical to operations and priority of use must be strictly enforced. Full contrc is exercised.

HIGHWAY REGULATION

Reserved Route

The route is reserved for the exclusive use of a particular unit or type of traffic and no other units or traffic may use the route. Reserved routes may be identified for large unit movements.

Examples are when a maneuver unit must pass another forward, when reserve formations are committed, or when units are withdrawn for reconstitution.

Prohibited Route

The route is closed and no unit or traffic may use the route. No traffic is allowed over a prohibited route.

A route may be prohibited due to washouts, destroyed bridges, maintenance, or construction work. It may be prohibited for only short periods, such as the time necessary to do repairs.

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Traffic Circulation Plan

A Traffic Circulation Plan is a graphic representation of the highway network, usually in overlay form, and will usually contain the following features:

- Names of MSRs and ASRs
- Indicates direction of travel
- Designates check points and critical points
- Designates Traffic Control Points (TCPs) for **Battlefield Circulation Control** (BCC)
- Identifies major supply activities
- Establishes geographic and unit boundaries
- Displays restrictive route features
- Identifies rest and refuel areas
- Includes a North arrow

The TCPs contain key input for the Highway Regulation Plan (HRP).

This screen shows the features of a Traffic Circulation Plan. Highway regulators are tasked to create enough check points to effectively manage the route.

Traffic Control Points are those locations where the Military Police will be posted along the route to enforce Battlefield Circulation, and must be coordinated with the Provost Marshall to ensure support.

Traffic Control Points contain key input for the Highway Regulation Plan.

Caution

Too many check points will impede flow, so be careful in selecting them.

Battlefield Circulation Control

Battlefield Circulation Control consists of ensuring combat personnel, equipment, and supplies move smoothly, quickly, and with little interference on MSRs.

It includes route reconnaissance and surveillance, enforcement of Highway Regulation, straggler and refugee control, and information dissemination.

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Highway Regulation Plan

The Highway Regulation Plan is a written plan that describes the MSR network, establishes control measures, and informs all area units the policies and procedures governing convoy or oversize/overweight vehicle movements.

It coordinates with the Transportation Command Element (TCE), lower echelon highway traffic sections, Division Transportation Officers (DTOs), and appropriate Host Nation (HN) authority, for any movements that originate in the corps area, but which terminate outside the corps.

As a text version of a Traffic Circulation Plan overlay, it describes highway network utilization information within an OPLAN or OPORD.

Refer to FM 4-01.30, Movement Control, Appendix I, found within the Reference section, for an example of a Highway Regulation Plan.

All organizations with a wartime Highway Regulation mission are responsible for developing Highway Regulation Plans.

These plans are also used by the Provost Marshal to develop the Traffic Control Plan.

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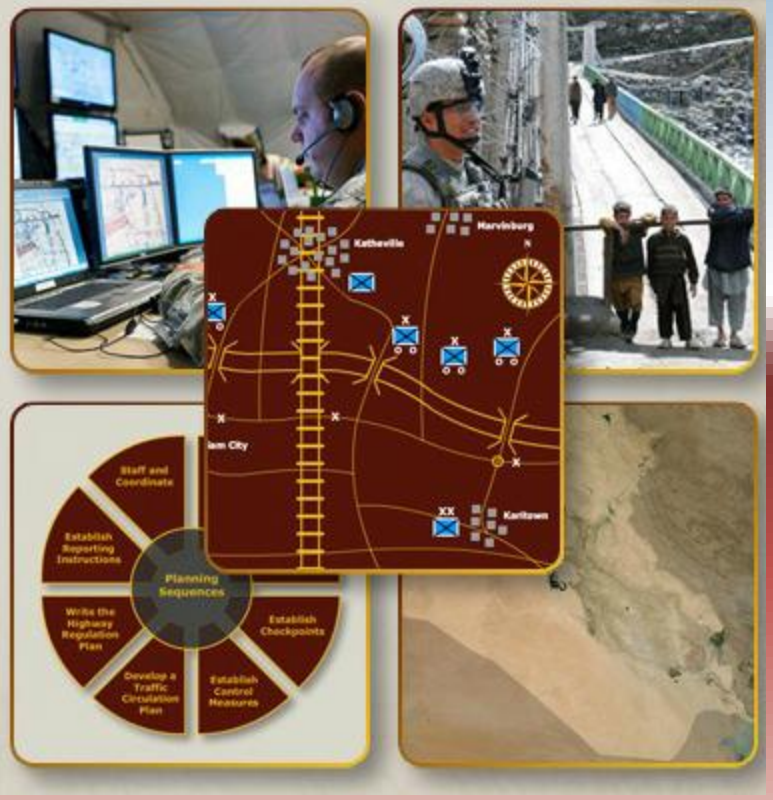
Key Points

The following key points regarding Highway Regulation planning concepts were discussed:

- Main Supply Routes
- Road Networks
- Critical Points and Check Points
- Control Measures
- Traffic Circulation and Highway Regulation Plans

KEY POINTS



The following key points regarding Highway Regulation planning concepts were discussed: Main Supply Routes; Road Networks; Critical Points and Check Points; Control Measures; and Traffic Circulation and Highway Regulation Plans.

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Quick Challenge

QUICK CHALLENGE

The First Destination Reporting Point is a point established near a boundary or along an MSR that diverts drivers and cargo to an alternate consignee or destination.

Identify one task performed at a First Destination Reporting Point. Select the best answer and then select Submit.

A. Coordinates host nation assets with contractors

✓ B. Serves as a linkup point for armed convoy escort vehicles

C. Maintains a maintenance facility

D. Tracks location of critical personnel

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Quick Challenge

QUICK CHALLENGE

Identify one important function that a Main Supply Route must achieve.

Select the best answer and then select Submit.

A. Coordinates with the organizational control vehicle placement

B. Establishes access to a Forward Operating Base

C. Maintains vehicle density within the Route Reconnaissance Plan

✓ D. Must be extendable to support forward movement of maneuver forces

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Routing Principles and Plans

As discussed earlier, the Traffic Circulation Plan (TCP) is your map overlay which describes the road network, while the Highway Regulation Plan (HRP) is a written narrative that compliments the TCP and is included in OPORD/OPLAN.

Routing is the process of coordinating or directing movements on designated highway routes, normally designated as Main Supply Routes (MSRs) or Alternate Supply Routes (ASRs). Routing is governed by four principles and three fundamentals.

Highway Regulation Plan
Routing principles include:

- Coordinating or directing movement on the MSRs
- Ensuring high priority is given to minimum time - distance goals
- Considering the sustained capabilities of routes
- Separating military motor movements from pedestrian and civilian vehicular traffic (consider refugee movement)

The routing function is the process of coordinating and directing movements on Main Supply Routes or Alternate Supply Routes, and regulating movement on Lines of Communication to prevent conflict and congestion.

Force Protection concerns must incorporate maintaining a separation of military traffic from civilian traffic, as some austere countries have rather chaotic traffic situations.

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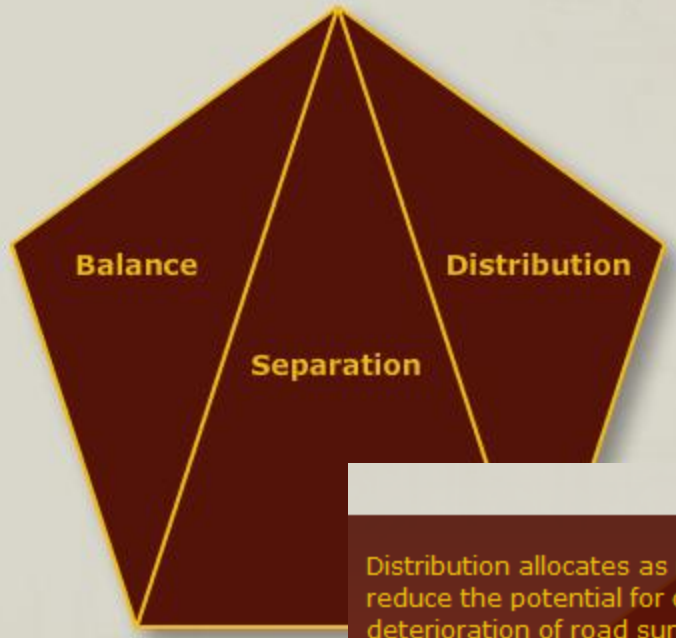
Routing Fundamentals

The following routing fundamentals ensure movements on MSRs and ASRs are coordinated and free of conflicts:

- **Balance**: Match vehicle characteristics with route characteristics
- **Separation**: Allocate road space to prevent conflicts
- **Distribution**: Spread traffic over a variety of routes



BALANCE

Balance matches vehicle characteristics with route characteristics, ensuring that traffic never routinely exceeds the most limiting feature of a route.

It considers the military load classification of the vehicles, bridges, and the route.

Balancing also identifies requirements for upgrading routes or ordering caution crossings for certain bridges.

Planners should use TB 55-46-1 to obtain vehicle characteristics. Route characteristics are obtained during the planning process.

DISTRIBUTION

Distribution allocates as many routes as possible to reduce the potential for congestion and prevent deterioration of road surfaces.

Distribution also promotes passive defense by distributing and separating traffic.

SEPARATION

Separation allocates road space for movements to ensure that movements do not conflict.

The goal of separation is to prevent congestion on regulated routes.

Planners must not allocate road space or time blocks to more than one movement requirement.

The movement control organization establishes movement regulating teams along the various Main Supply Routes.

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Ground Transportation Request Process

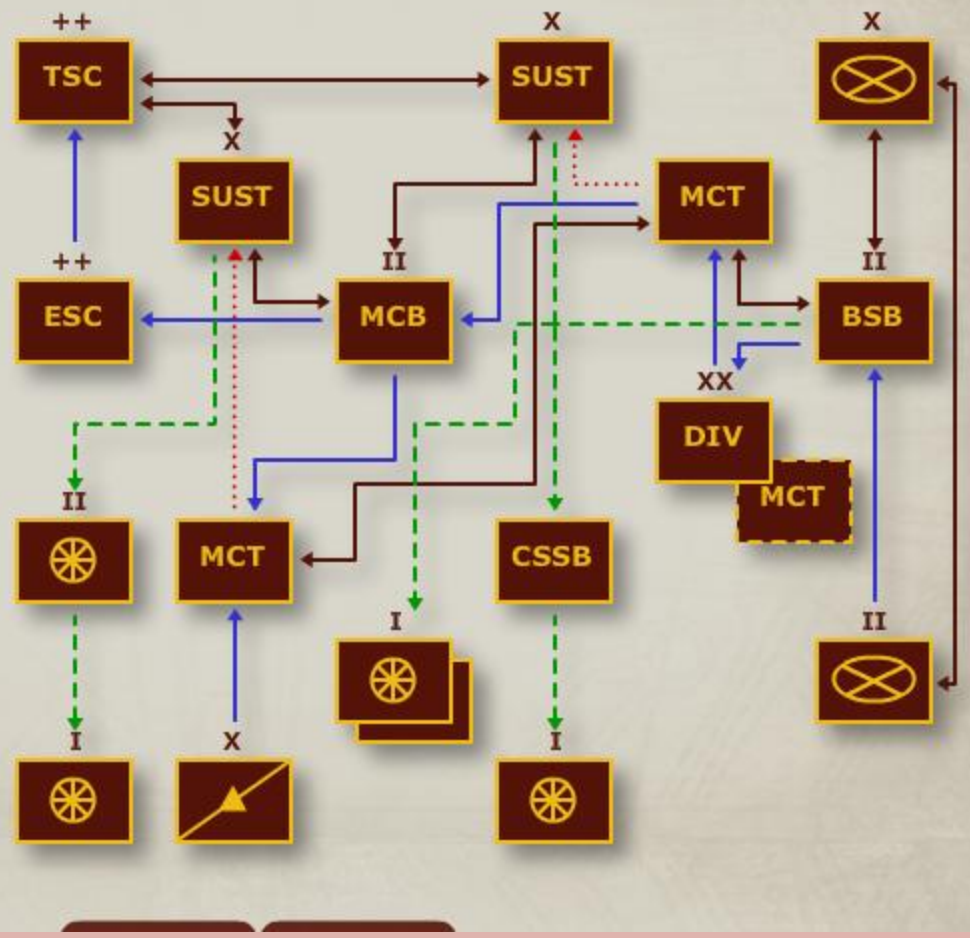
Units normally request ground transportation support through their BDE/BN S-4 by using a ground transportation request (GTR) form. (See instructional example of a GTR in the reference section.)

The S-4 sends requests for transportation to the BSB SPO, who may task assigned transportation elements to perform the mission.

If the request for support exceeds the BSB's lift capabilities, then the SPO forwards the request to the DTO.

The DTO normally sends the request to the servicing Movement Control Team (MCT) in the area, which may be collocated with a sustainment brigade.

In threat environments, this process incorporates coordination with the Project and Contracting Office (PCO) Logistics Movement Coordination Center (LMCC).



Request
Commitment
Tasking
Coordination

The S-4 Mobility Warrant Officer within the Theater Sustainment Command or Expeditionary Sustainment Command provides guidance, plans, policies, and staff supervision for transportation operations.

HIGHWAY REGULATION

MOVEMENT

Movement Bids are:

- A request form that grants permission to move on controlled routes
- One reason that Convoy commanders need to calculate the arrive and clear times at the following locations:
  - Start Point (SP)
  - Enroute Check Points (CKPs)
  - Release Point (RP)

CLEARANCE

Clearance requests are:

- Submitted to Division Training Officer or Corps / Echelon above Corps Movement Control Team (MCT)
- MCT forwarded to the Movement Control Battalion
- Bids considered based on command priorities
- Either approved or rescheduled in concert with requesting unit
- Resultant to movement credits authorizing movement

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Movement planners must identify checkpoints along the route to control movements.

Included in the movement plan is an MSR checkpoint list that provides reference data about the MSR network, such as checkpoints, feeder routes into the MSR, and distances.

Movement control personnel and customers use this information to identify a path to be used from origin to destination, and to identify segment numbers for use in requesting movement bids and receiving movement credits.

The Movement Control Team assists in Highway Regulation by forwarding movement bids and providing technical advice to units in movement planning.

Movement Bids

TO: 502 MCC | THRU: 51st Trans Bn | FROM: 151st Trans Co | DATE: 15 Feb XX | EXT # 46061

SECTION I. MOVEMENT DATA

MOVING UNIT	CONVOY CDR	START POINT	RELEASE PT	TYPE OF MOVEMENT
150th Trans Co	CPT Nedry	GRID: ND610397 LOC: Smith	GRID: NE010900 LOC: Dover	Unit Move

MOVEMENT DATE: 1 Mar XX | SP TIME: 0800 | MOVEMENT CREDIT # 3

CONVOY ORGANIZATION	# SERIALS	SERIAL GAP	#MU	MU GAP	VEH GAP	RATE OF MARCH
	3	10 Min	3	5 Min	100m	50

CHECK POINTS	DISTANCE (KM) BETWEEN PTS	ARRIVE	CLEAR	ROUTE DESCRIPTION	CRITICAL PTS/ HALTS
CP4 (SP)		0800	0833	MSR Dart	
CP8	10	0812	0845	MSR Dart	
CP5	15	0830	0903	MSR Dart	
CP1	10	0842	0915	MSR Dart	
CP13 (RP)	5	0848	0920	MSR Dart	

SECTION II. VEHICLE/LOAD DATA

CONVOY COMPOSITION, OVERSIZE/OVERWEIGHT VEHICLES

# OF TRACKS	# OF WHEELS	HEAVIEST VEH/WT/MLC
	87	M915/M872 Tractor Trailer, 53,401, 45MLC

QTY	MODEL	DESCRIPTION	LOAD INFO	L	W	H	WT	OTHER/HAZ MAT
95	M915/M872	TRACTOR/TRAILER		668	96	115	53,401	
5	M1009	CUCV		192	95	75	6,720	
2	M936A2	WRECKER		362	97	118	36,010	

REQUESTER'S NAME, TITLE, PHONE: 1LT Christy, Plto Ldr, 868-6315

SIGNATURE:

SECTION III. AUTHENTICATION

MOVEMENT CLEARED BY: _____

AT DTG: _____

CLEARANCE PASSED TO: _____

AT DTG: _____

Movement bids are request forms that grant permission to movement onto controlled routes.

Movement bids requires that the convoy commander calculate the arrive and clear times at Start Points, Enroute Check Points, and the Release Point.

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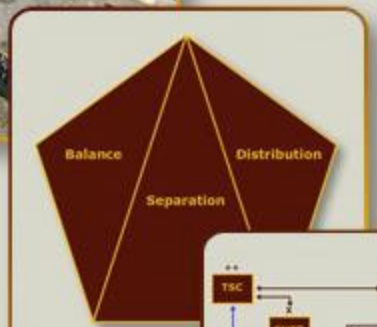
Key Points

The following key points regarding road movement planning concepts were discussed:

- Routing principles
- Routing fundamentals
- Ground transportation requests
- Movement bids

The following key points regarding road movement planning concepts were discussed; routing principles; routing fundamentals; ground transportation requests; and movement bids.

KEY POINTS



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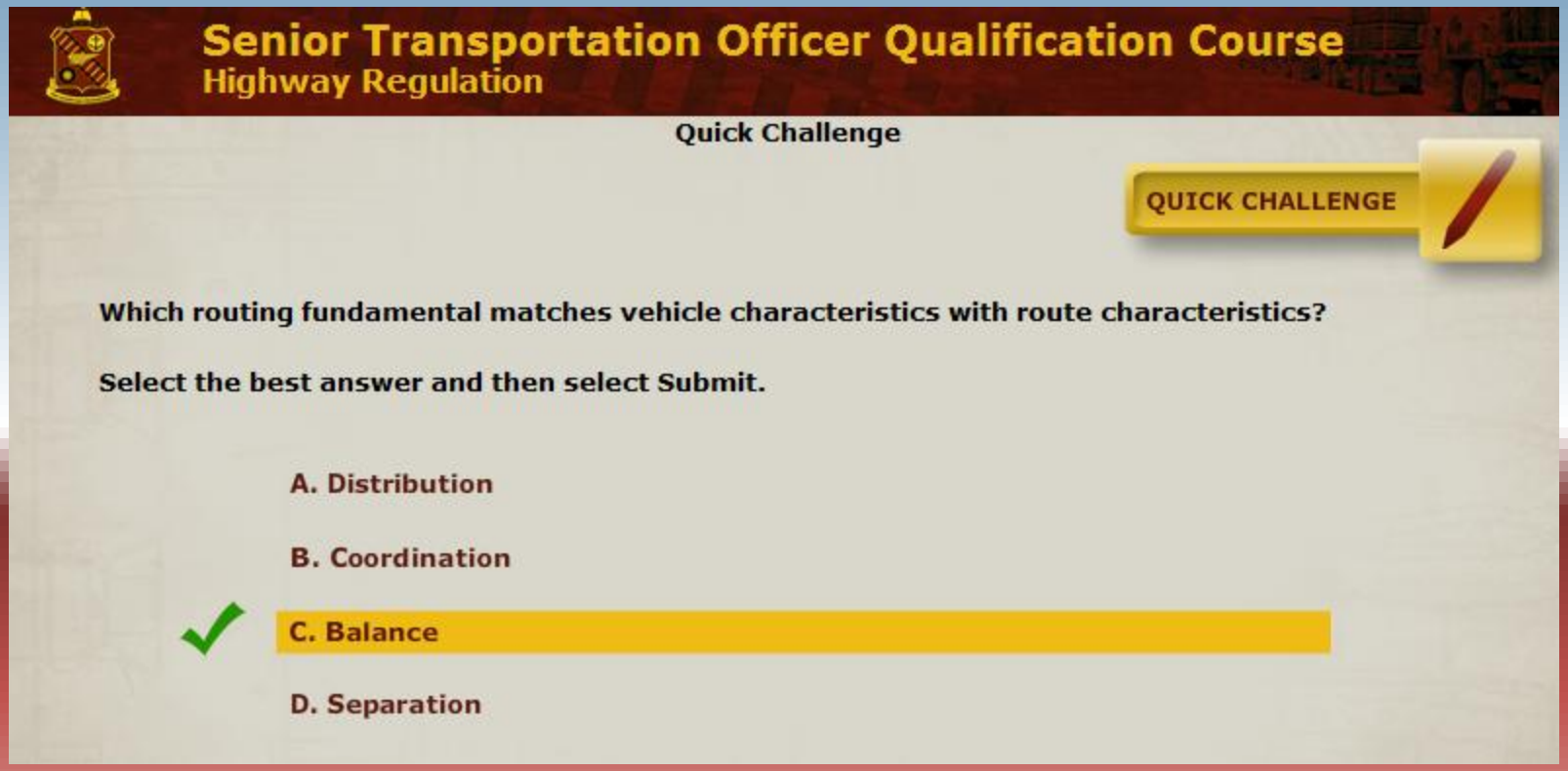

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Scheduling

Scheduling is the process of coordinating times for road movements and involves receiving and managing movement requests, and issuing clearances as a function of Highway Regulation.

Scheduling procedures may require movement bids, deconflicting, and issuing movement credits.

Examples of movements requiring scheduling, coordination, and inbound clearance include:

- Movement on routes requiring a movement credit
- Movements that cross movement control boundaries (from origin to termination)
- Large unit movements with detailed planning

Highway Regulation planning requires that scheduling guidance be provided to the moving units so they can conduct their internal planning for the movement.

The main factor will be the availability of routes. Scheduling is essential to the application of the principles of routing.

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Scheduling Methods

The method of scheduling road movements is based on the control measures specified for the route.

The four types of scheduling methods (from the least restrictive to the most restrictive) are listed below:

- Infiltration Schedule
- Route Schedule
- Location Schedule
- Column Schedule

Movement planners can use the following scheduling techniques:

- Creating reserved routes for particular units.
- Using location or column scheduling to allocate time blocks for movement if units share routes.
- Developing movement tables if routes are limited and the requirement for control is greatest.

The four types of scheduling methods (from the least restrictive to the most restrictive) are listed below: Infiltration Schedule; Route Schedule; Location Schedule; and Column Schedule.

Don't confuse your scheduling methods with your route control methods... ever!

HIGHWAY REGULATION

INFILTRATION

This schedule is a rate of dispatch assigned to units for specific routes and time blocks to achieve an average traffic flow that is within the capacity of the route.

By assigning rates of dispatch to different units that need to use the same route, average traffic flow can be held within desired limits.

An infiltration schedule may be used for open or supervised routes.

ROUTE

This schedule is a flexible scheduling method. It apportions blocks of time on MSRs to units, types of movements, phases of the operation, or for route maintenance.

A route schedule may be used for supervised, dispatch, or reserved routes.

ROTATION

This schedule is more restrictive than an infiltration or route schedule. It assigns arrive and clear times to different units needing to use the same entry point onto MSRs.

The location will normally be a CP. For example, at a particular CP, unit A may be scheduled to arrive at 1000 and to clear at 1015, unit B to arrive at 1020 and to clear at 1030, and so on.

A location schedule may be used for supervised or dispatch routes.

COLUMN

This schedule is the most restrictive scheduling method. It specifies arrival and clear times at CPs along an entire route.

It may be based on the requestor's movement request or movement table, or on movement tables issued by the movement control organization.

Based upon the extent of control required, a column schedule can provide the most effective Highway Regulation because it provides in-transit times to reach CPs and helps the pacesetter maintain the prescribed rate of march.

It may be used for supervised, dispatch, or reserved routes. It should also be used when congestion is anticipated.

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Large Unit Movement

Planning for movement of large units consists of four concurrent steps:

- Determining timeframe and requirements for the move
- Analyzing organic / nonorganic movement capabilities
- Establishing movement priorities

The following fundamental precepts of METT-TC influence the planning for large unit moves:

- Task organization of units, current location, and concentration
- Adequacy of routes to support vehicles and tonnages
- Available assembly areas and transportation modes at origin and destination
- Control measures, coordination, and logistics movement support (ex. refuel-on-the-move (ROM)
- Deception measures before and during the movement, and at destination
- Enemy situation, route and geographic conditions, and weather

Large unit movements will normally be planned by the moving units under parameters defined by the G-3 and/or movement control headquarters.

Critical supplies may have to be pre-positioned or moved by alternate modes such as air, rail, or inland waterways; while traffic control, mobile regulating teams, enroute logistics support such as refuel-on-the-move, maintenance, and life support must be pre-positioned.

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HET Support

Heavy Equipment Transporter (HET) trucks may be requested to move heavy forces, increasing the capability of the maneuver commander to quickly and efficiently relocate forces.

HET move characteristics include:

- Moving heavy forces quickly
- Providing max combat power with ready forces
- Use is governed by condition of roads, distance, and availability of assets

Heavy equipment transporter trucks can assist in moving the maximum amount of combat power to the decisive point and time to attain or keep the initiative and have forces arrive in a high state of readiness.

Their utilization will be governed by their availability, the conditions of the road network, and the distance to be traveled.

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Movement Measurement

Movements are measured by calculating how long it takes to move a given distance.

The three methods of measurement are:

- Speed
- Pace
- Rate of march

Movement planners normally use rate of march in performing movement calculations.

The three methods of measurement are speed, pace, and rate of march.

SPEED

Speed is the actual rate at which a vehicle is moving at a given time as shown on the speedometer. It is expressed as kilometers or miles per hour (kmph or mph).

PACE

Pace is the regulated speed of a convoy or an element as set by a lead vehicle, the pacesetter.

It is constantly adjusted to suit road, terrain, and weather conditions. Pace is also expressed as kmph or mph.

RATE OF MARCH

Rate of march is the average number of kilometers or miles traveled in any specific time period.

It includes short periodic halts and short delays, but it does not include long halts, such as those for consuming meals or for overnight stops. It is expressed in kilometers or miles in the hour (kmph or mph).

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Time and distance factors are used to perform a wide range of calculations for planning highway movements.

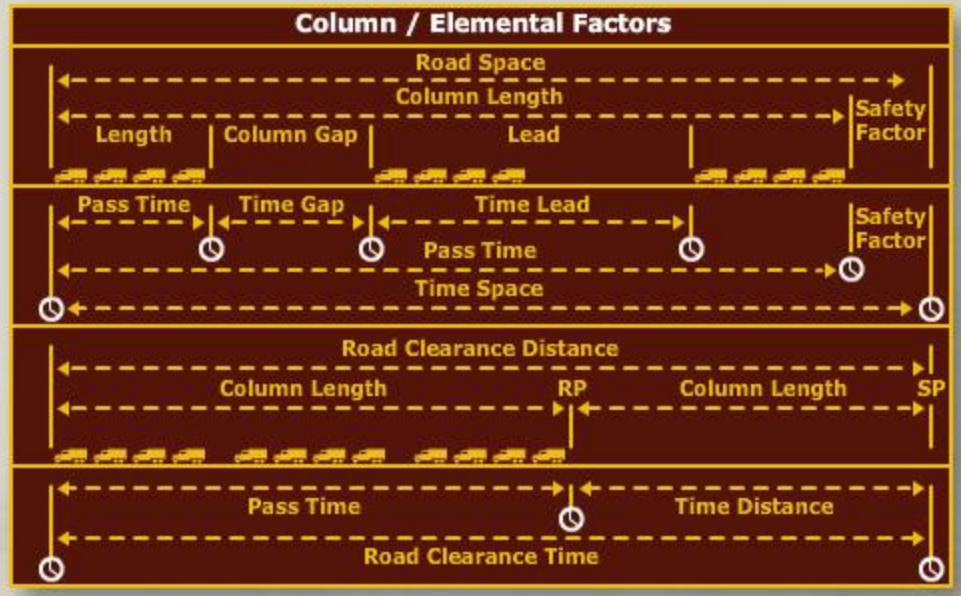
They can be used to conduct detailed planning to develop movement tables, or conduct expedient planning and calculating to manage movement requests.

The terms used to describe distance factors are as follows:

- **Length**
- **Road space**
- **Gap**
- **Lead**
- **Road distance**
- **Road clearance distance**

Distance factors are expressed in kilometers or meters. Time is expressed in hours or minutes.

Time and Distance Factors



HIGHWAY REGULATION

Length

Length of any column or element of a column is the length of roadway that it occupies.

It is measured from the front bumper of the lead vehicle to the rear bumper of the trail vehicle and includes all gaps inside the column.

Lead

Lead is the space between the heads of elements in a convoy or between heads of successive vehicles, march units, serials, or columns.

Road Space

Road space is the length of a column, plus any additional space (safety factor) added to the length to prevent conflict with preceding or succeeding traffic.

Road Distance

Road distance is the distance from point to point on a route, normally expressed in kilometers.

Gap

Gap is the space between vehicles, march units, serials, and columns. It is measured from the trail vehicle of one element to the lead vehicle of the following element.

The gap between vehicles is normally expressed in meters. The gap between march elements is normally expressed in kilometers.

Road Clearance Distance

Road clearance distance is the distance that the head of a column must travel for the entire column to clear the Release Point (RP) or any point along the route.

Route clearance distance equals the column's length or road space plus road distance.

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Time and Distance Factors (cont.)

The terms used to describe time factors are as follows:

- **Pass time**
- **Time space**
- **Time gap**
- **Time lead**
- **Time distance**
- **Road clearance time**

Pass Time

Pass time (or time length) is the time required for a column or its elements to pass a given point on a route.

Time pace

Time space is the time required for a column or its elements to pass any given point on a route plus any additional time (safety factor) added to the pass time.

Time ap

Time gap is the time measured between vehicles, march units, serials, or columns as they pass a given point.

It is measured from the trail vehicle of one element to the lead vehicle of the following element.

Road learance Time

Road clearance time is the total time a column or one of its elements requires to travel the road distance and clearance point along the route or the Release Point (RP).

Road clearance time equals the column's pass time or time space plus time distance.

I know, typo on ‘Time Space, Time Gap, Time Lead’, ‘Time Distance’ and ‘Road Clearance Time’

Time ead

Time lead is the time measured between individual vehicles or elements of a column, measured from head to head, as they pass a given point.

Time istance

Time distance is the time required for the head of a column or any single vehicle of a column to move from one point to another at a given rate of march.

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Time and Distance Factors (cont.)

Time, distance, and rate factors are used to make scheduling calculations for columns of any size.

When two of the three factors are known, the third can be determined by using one of following formulas:

Distance: Distance equals rate multiplied by time. If the rate of march is 40 kmih and time is 4 hours, the distance is 160 km: 40 × 4 = 160.

Rate: Rate equals distance divided by time. If a convoy travels for 5 hours to complete a 190 km trip, its rate of march is 38 kmih: 190 ÷ 5 = 38.

Time: Time equals distance divided by rate. If the distance is 210 km and the rate of march is 42 kilometers in the hour (kmih), the time is 5 hours: 210 ÷ 42 = 5.

Observe the triangle chart and follow the instructions to complete the above calculations.

Automated in-transit visibility programs can provide commanders and movement planners with calculations, but the ability to calculate manually may become necessary.

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Arrive Time Calculations

To manage movements on Main Supply Routes (MSRs) by using location or column scheduling, movement control organizations can use an expedient method of planning and calculating.

The minimum essential information needed is the arrive and clear times at Start Points, intermediate Check Points, and Release Points.

Arrive time = (Distance ÷ March Rate) × 60 minutes

Example: A march unit departs SP at 0800. The distance to the next checkpoint is 12 km. The rate of march is 36 km/h. If the leave time is 0800, what time will the march unit arrive at the next checkpoint (round up to the next whole minute)?

Solution: (12 ÷ 36) × 60 = 20 minutes. The arrive time at the next checkpoint will be 0820.

Additional information on calculation formulas can be found in FM 4-10.30 (FM 55-10), Movement Control, Appendix G.

Much of the data used in these calculations will be provided by the task organization and some from the Highway Regulation Plan.

The unit making the move is responsible for doing their own calculations when submitting their movement bid.

As a Senior Transportation Officer, you may have to assist or confirm that the calculation data is correct.

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Clear Time Calculations

Once you have calculated the arrive time of an element, the next step is to figure the clear time.

To determine clear time, these four factors must be computed:

- DENSITY of the moving element's vehicles
- Total TIME GAPS between elements
- Total ROAD SPACE of the moving element
- PASS TIME of the moving element

A key point to remember is that the pass time at each checkpoint will be the same **provided** that the rate of march **does not change**.

Ensure you round to the nearest whole vehicle. Example: (.4 vehicles = 0 ÷ .6 vehicles = 1)

Therefore, once you have determined the pass time, you will only need to add that time to each arrive time to determine the clear time.

Density	=	$\frac{\text{1,000 meters}}{\text{Gap + Avg of each Veh}}$
Time Gaps	=	[(Number of March Units - 1) × March Unit Time Gap] + [(Number of Serials - 1) × (Serial Time Gap - March Unit Time Gap)]
Road Space	=	$\frac{\text{Number of Veh}}{\text{Density}} + \frac{\text{Time Gaps} \times \text{March Rate}}{\text{60 Mins}}$
Pass Time	=	$\frac{\text{Road Space} \times \text{60 Mins}}{\text{March Rate}}$
Arrive Time	=	$\frac{\text{Distance B/T Pts} \times \text{60 Mins}}{\text{March Rate}}$
Clear Time	=	Arrive Time + Pass Time

	Arrive Time	Clear Time
Example SP	SP Time	SP Time + Pass Time
CKP 54	SP Time + Arrive Time	SP Time + Arrive Time + Pass Time

Density is the average number of vehicles within the distance of one kilometer. Here you would round to the nearest whole vehicle.

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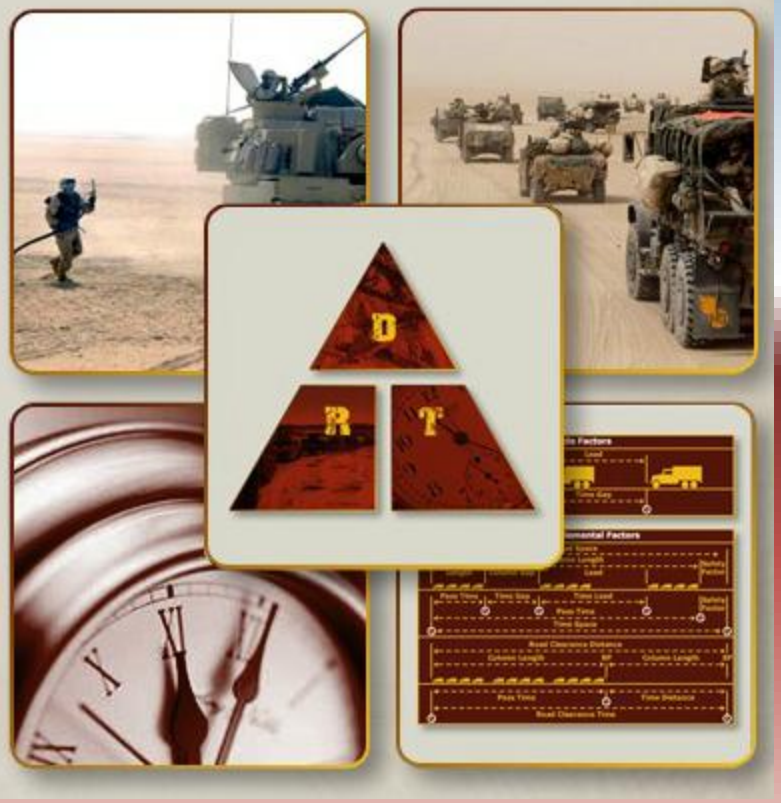
Key Points

The following key points regarding scheduling and movement measurements were discussed:

- Scheduling methods
- Large unit movement
- Time and distance factors
- Arrive and clear time calculations

KEY POINTS



The following key points regarding scheduling and movement measurements were discussed: scheduling methods; large unit movement; time and distance factors; and arrive and clear time calculations.

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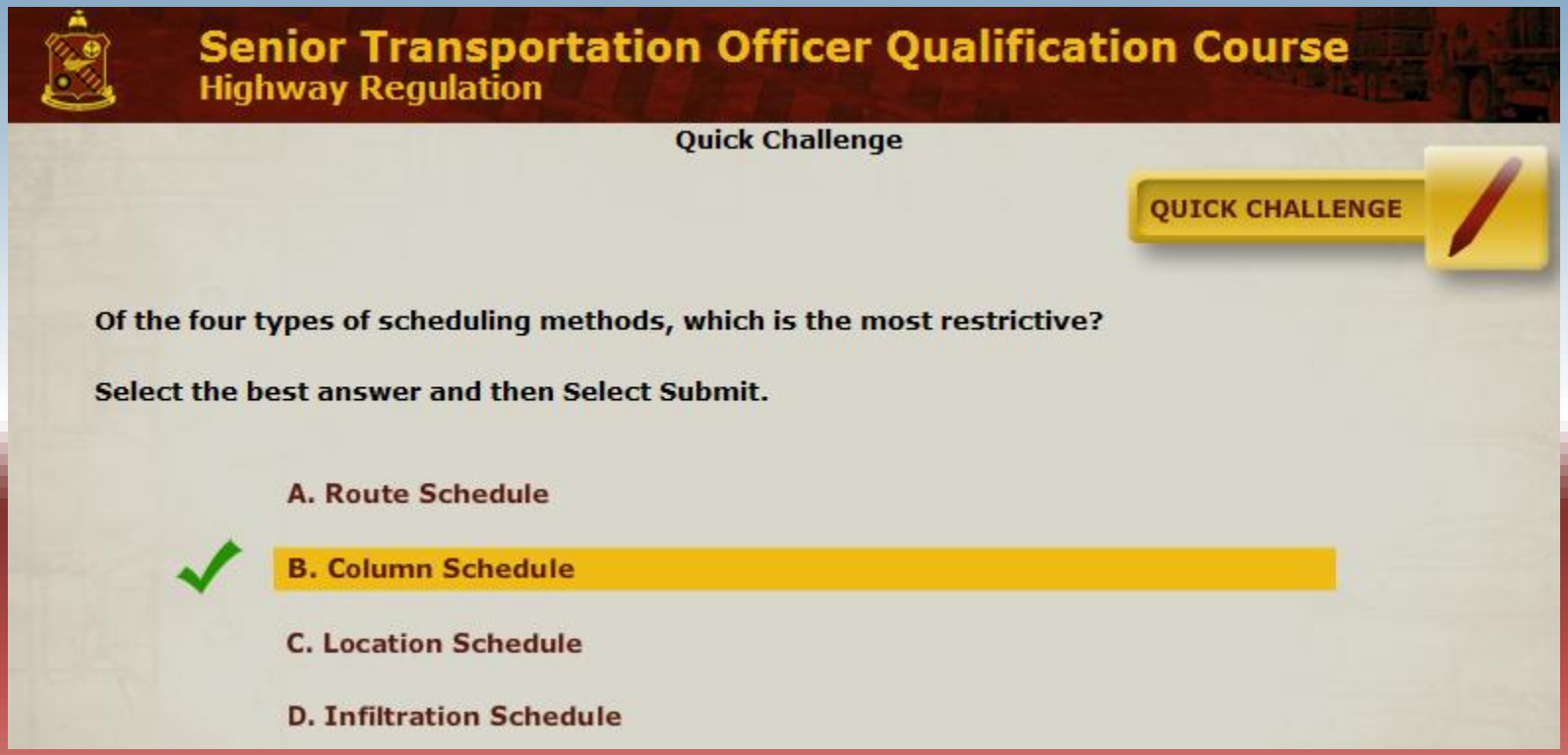

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Quick Challenge

QUICK CHALLENGE

Movements are measured by calculating how long it takes to move a given distance. The three methods of measurement are _____.

Select the best answer and then select Submit.

A. speed, linear differential, and rate of march

B. rate of march, speed, and ordinal scale

C. pace, rate of march, and interval ratio

D. speed, pace, and rate of march

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Quick Challenge

QUICK CHALLENGE

Senior Transportation Officer duties may have you confirm movement computations by manual methods. Information has been provided for you to establish the arrive time of Convoy Cherokee from Check Point 2 to the rest and refuel stop designated within a Highway Regulation Plan:

1. Distance from Check Point 2 to the rest and refuel stop is 90 km
2. March Rate is 30 kmih
3. Departure time from Check Point 2 is 1100 hours.

Arrive time = Distance ÷ March Rate × 60 minutes (Remember to round up to the next whole minute)

Using the above formula, what is your manual calculation of the arrive time of Convoy Cherokee to the rest and refuel stop after departing from Check Point # 2?

Select the best answer and then select Submit.

A. 1415 hrs

✓ **B. 1400 hrs**

C. 1430 hrs

D. 1440 hrs

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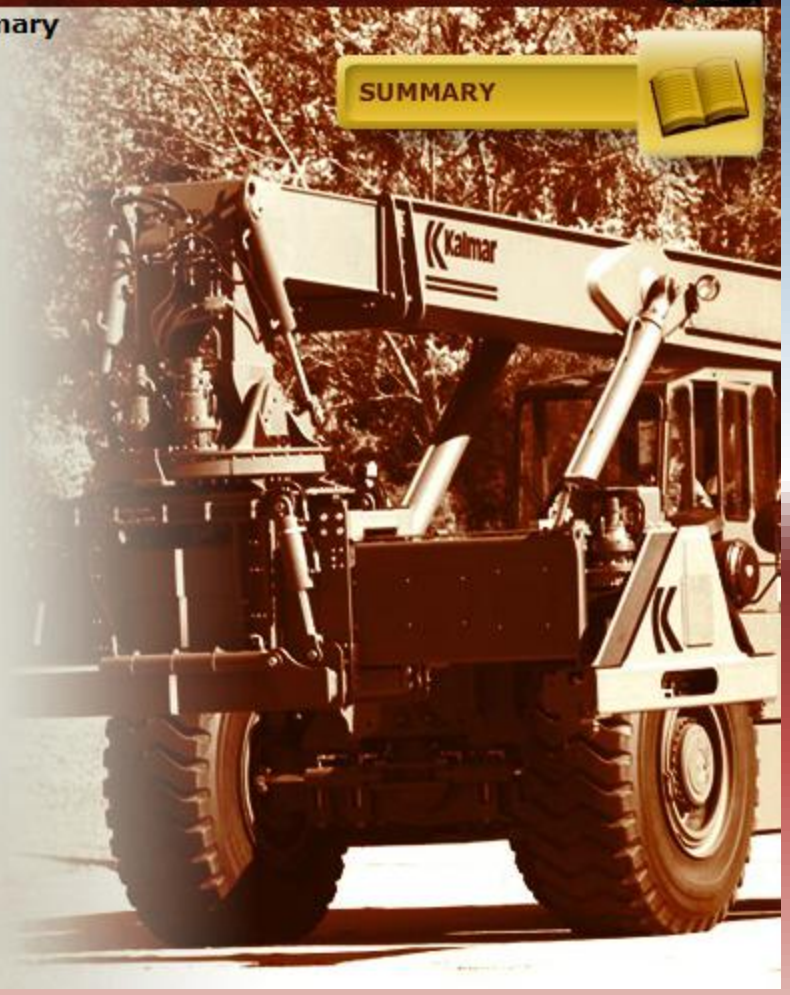
Summary

Effective and efficient use of the area road networks must follow the area commander's priorities.

In this lesson, you have learned about the role and functions of Highway Regulation for Movement Control, including:

- Movement Control principles
- Highway Regulation planning
- MSRs and road networks
- Planning sequences
- Control measures
- Routing principles
- Scheduling methods

As a Senior Transportation Officer, it is important to understand the role Highway Regulation plays in movement and distribution within a theater of operations.

Good luck on the assessment