



Implementation of Variable Speed Signs

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Variable Speed Limit System

- Rural Highway Safety and Speed Review (2014)
- Highway 99: Sea to Sky Highway
- Highway 5: Coquihalla Highway
- Highway 1: Revelstoke Area



Selection Criteria and Rationale

- More than one climatic zone
- Significant changes in elevation
- Maximum speed limits
 - » Ideal conditions.
 - » Adjust to suit.
 - » Adjusted speed is not necessarily apparent.
- Variable Speed Limit Systems will improve safety in adverse weather conditions.



- Concept of Operations
- Sign Technology Review
- Detailed Design
- Early Procurement
- Construction
- Software Development
- Testing and Commissioning

Concept of Operations

- Road Weather Subsystem
 - » Pavement Condition (Grip Factor)
 - » Visibility
- Traffic Subsystem
 - » 85th% Traffic Speed
 - » Traffic Density
- Lowest Speed Selected
- RTMC Operator Input



- Integration of Intelligent Transportation Devices
 - » Dynamic Message Signs (DMS)
 - » Road Weather Information System (RWIS)
 - » Pavement Condition and Temperature Sensors
 - » Visibility Sensors
 - » Variable Speed Limit Signage
 - » Web Cameras
 - » Road Side Control Cabinets
- DriveBC and RWIS Integration

Variable Speed Limit Signs

- Regulatory Hybrid LED Sign
- Flashing Beacon
- Spacing ~ 5km
- Sign Technology Review

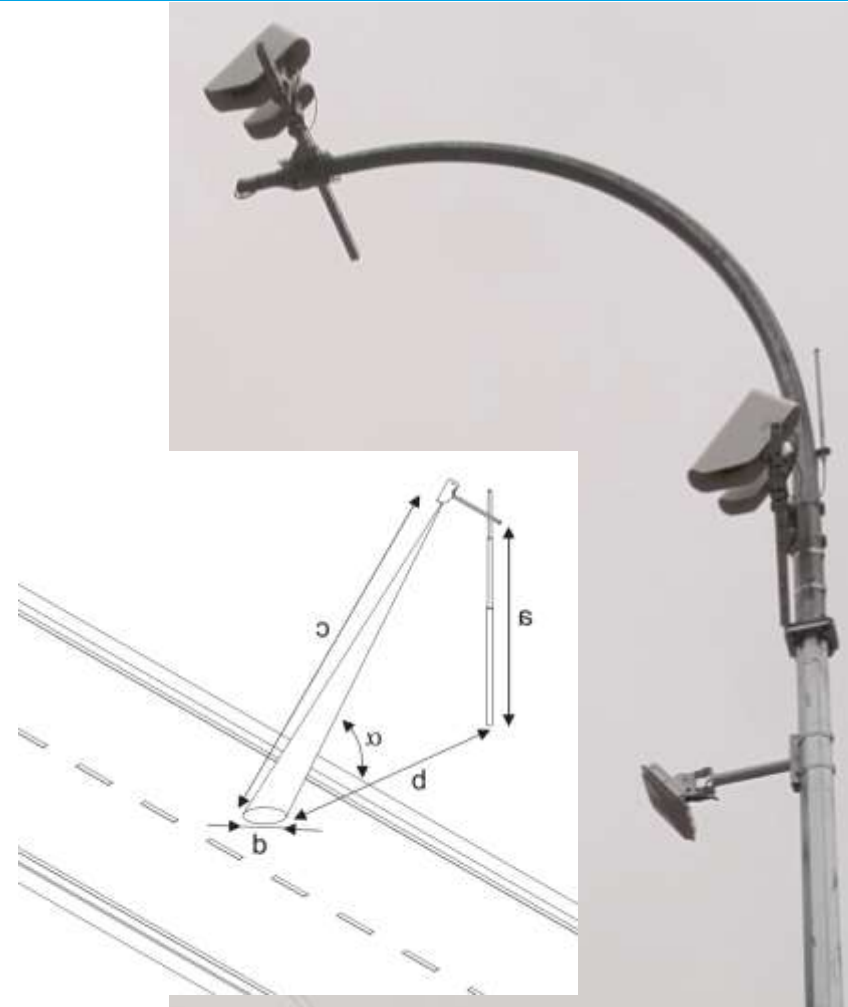


Variable Speed Limit Signs



Road Weather Information

- Infrared Light
 - » Pavement Temperature
 - » Pavement Condition
- Grip Factor
- Visibility
- Spacing ~ 10 km
- Both Directions of Travel



- Per-vehicle real-time data for VSLS logic
- Historical volume, speed, occupancy and classification by length and speed



Field Control Cabinets

- Power Distribution
- Cellular Modem
- Data Logger
- Sign Control
- UPS



Field Control Cabinets

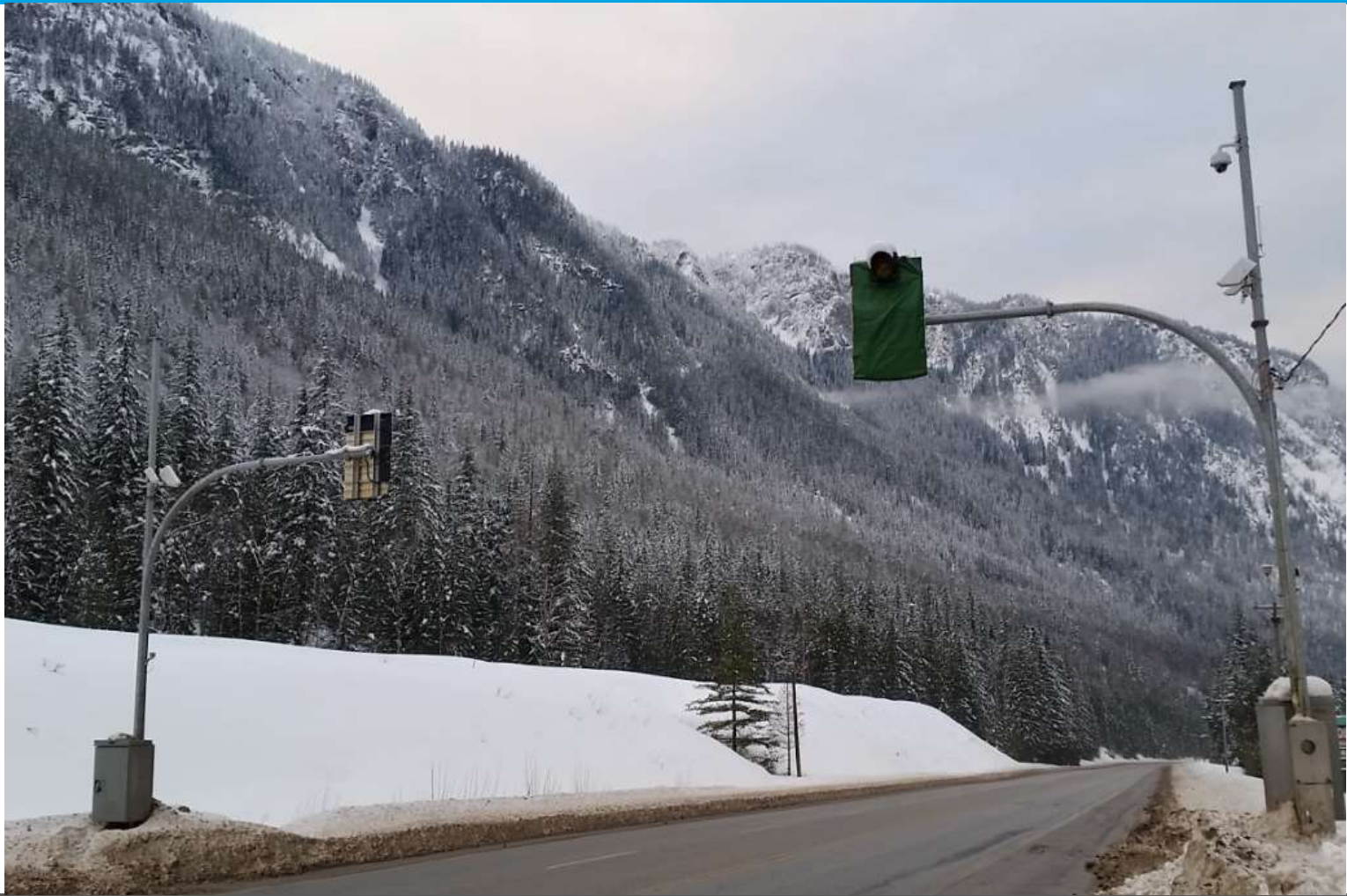


Dynamic Message Signs

- Event Driven
- Manual Control



Device Placement



Segment - Device Grouping

● Traffic Responsive Subsystem

LEGEND:



NORTHBOUND



SOUTHBOUND



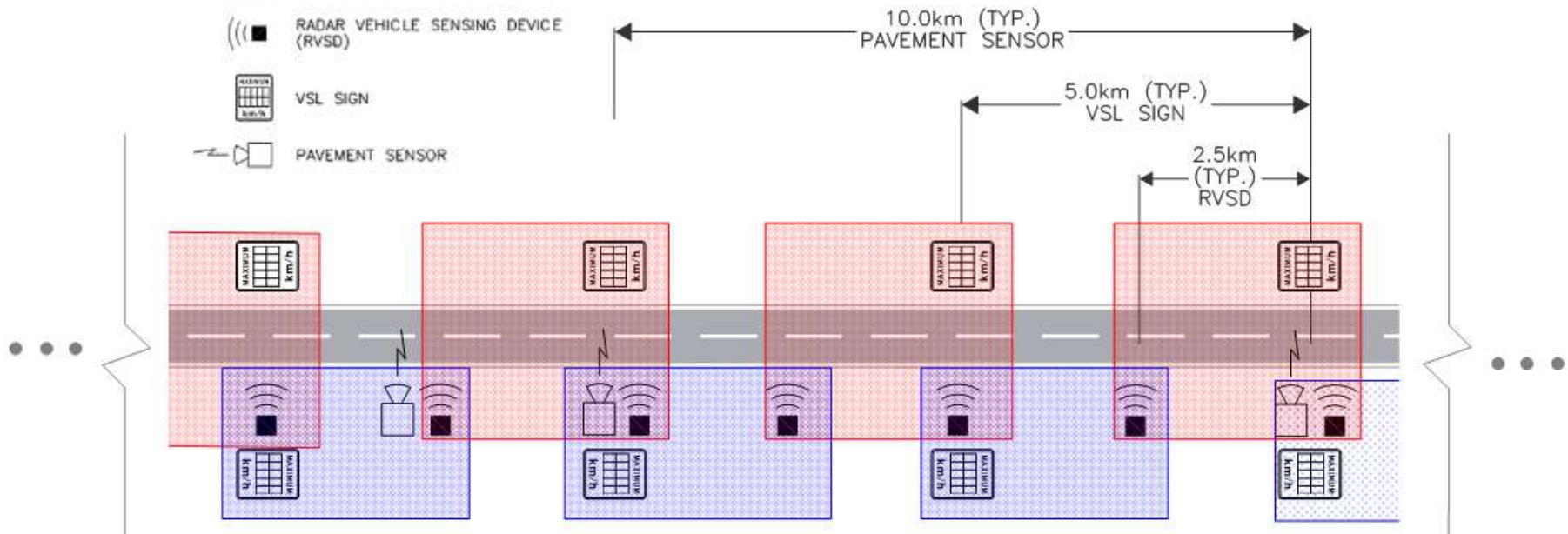
RADAR VEHICLE SENSING DEVICE (RVSD)



VSL SIGN



PAVEMENT SENSOR



Segment - Device Grouping

● Road Weather Responsive Subsystem

LEGEND:



NORTHBOUND



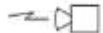
SOUTHBOUND



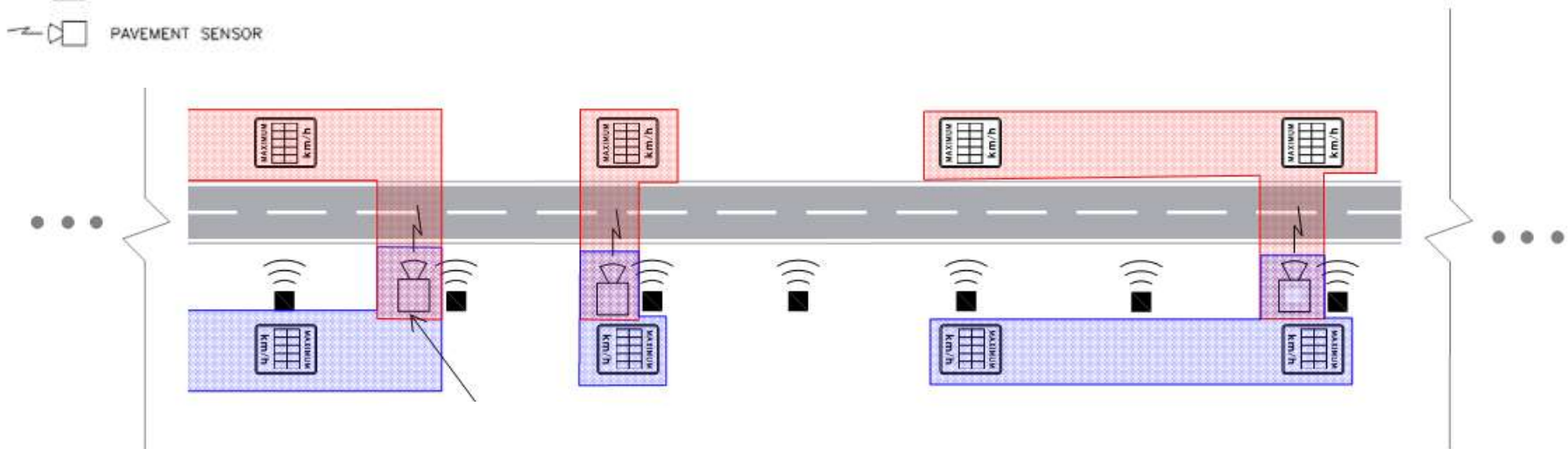
RADAR VEHICLE SENSING DEVICE (RVSD)



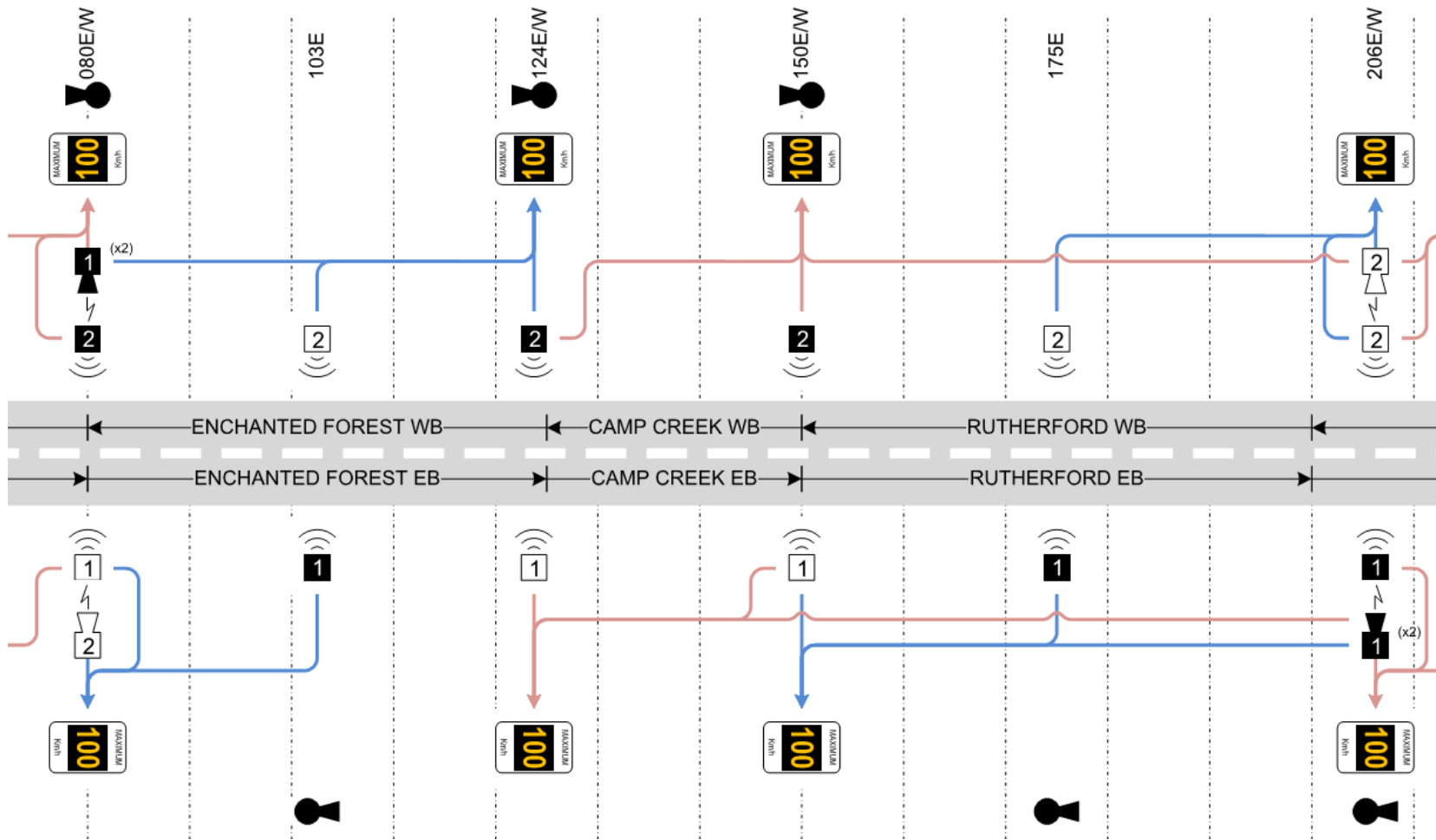
VSL SIGN



PAVEMENT SENSOR



Segment - Device Grouping



- Field Devices
 - » Factory Acceptance Testing
 - » Pre-integration Testing and Configuration
 - » Field Integration
- Software
 - » Lab Acceptance Testing
 - » System Acceptance Testing
 - » User Acceptance Testing

ATMS – Map Interface



Devices

- Signs
- VMS
- BOS
- VLS
- CCTV Devices
- Data Site
- Traffic Data Device
- Roadside Data Processor

Traffic Data

- Map Data Display Options

External Agencies

- ECOMM 911

ATMS – Segment Details

HWY 99 - SEA-TO-SKY

VLSL Speed Posting Operator Acceptance: Required
DMS Message Posting Operator Acceptance: Required

[View Detail](#)

Testable Corridor

VLSL Speed Posting Operator Acceptance: Required
DMS Message Posting Operator Acceptance: Required

[View Detail](#)

Testable Corridor > Test Segment

Speeds

ACCEPTED

MAX
70
km/h

Traffic

⇌

PROPOSED

MAX
60
km/h

Operator

Operator Speed

OPERATOR

MAX
60
km/h

Recommended mode.
Expires in 0 hours 22 minutes.

[+ Edit Speed](#)

[View Extra Information](#)

Currently Posted Speed Bitmap

Last Updated: Feb 26, 2016 9:59:56 AM

Subsystem Data

Road / Weather: 100 km/h

Location	Grip	Visibility (m)	Air Temp (C)	Surface Temp (C)	Reported Date
Testable RDP	0.81	2,200	2.7	3.0	Feb-01 16:07
Testable RDP	0.81	2,200	2.7	3.0	Feb-01 16:07

Traffic: 75 km/h

Location	Speed 85th (km/h)	Volume	Occupancy	Reported Date
Testable RDP	85	15	50.00	Feb-01 16:07
Testable RDP	75	12	60.00	Feb-01 16:07

Cameras [Select Camera](#)

DriveBC.ca Feb 1, 2016 3:30:06 PM

ATMS – Reports





RTMC VLS Reports

VLS Status Report

RDP Status Report

VLS Status Report

Search:

Sign	Corridor	Status	Status Date	Last Posted Speed (kph)	Date Posted	Message on Sign	Date Reported	
Eagle River EB	Tested Corridor	Operational	22/02/2016 5:01:11 PM	100	18/02/2016 10:37:05 AM		22/02/2016 5:01:11 PM	Verification
VLS-99-000N	HWY 99 - SEA-TO-SKY	Operational	22/02/2016 4:51:55 PM	100	21/02/2016 9:14:16 AM		22/02/2016 4:51:55 PM	Verification
VLS-99-038N	HWY 99 - SEA-TO-SKY	Operational	22/02/2016 4:52:01 PM	100	21/02/2016 9:14:20 AM		22/02/2016 4:52:01 PM	Verification
VLS-99-038S	HWY 99 - SEA-TO-SKY	Operational	16/02/2016 3:00:29 PM	100	13/02/2016 12:41:40 PM		16/02/2016 3:00:29 PM	Verification
VLS-99-078N	HWY 99 - SEA-TO-SKY	Operational	22/02/2016 5:01:16 PM	100	21/02/2016 9:13:28 AM		22/02/2016 5:01:16 PM	Verification