**Routine Inspection Optimisation Formulation v2**

**Sets**

* : Set of routine inspection segments
* Set of point defects
* : Set of all job nodes
* Set of all nodes including depots
* : Set of all crews

**Constants**

|  |  |
| --- | --- |
| **Constant description** | **Notation** |
| Job score | where |
| Job estimated completion time | where |
| Time from location to location using crew k | where |

**Decision variables**

**Objective**

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**Constraints**

1. Inspection segments must be completed
2. Conservation of flow. If a crew enters, crew must also leave
3. At most one edge/crew can be active leaving a job
4. At most one edge/crew can be active entering a job
5. If a job is completed, then ensure that we leave the job.
6. If a job is completed, then ensure that we enter the job.
7. Crews leaving and returning to the depot
8. Can’t enter or leave a depot that is not designated to that crew.
9. Cannot visit itself
10. Temporal constraints (Subtours constraint)
11. Shift time constraints