CHAPTER 7

Conclusion and Recommendation

Conclusion and recommendation are divided into three aspects according to objective of this thesis as environmental corrosivity category for Sri Lanka, surface preparation system to any place of the country and application of surface protection.

7.1 Environmental Corrosivity Categories for Sri Lanka

There are many steel structures in Sri Lanka that have continued to be in use for many years even in adverse environmental conditions. Conversely, a steel structure exposed to an aggressive environment needs to be protected with a sophisticated treatment and needs to be designed with maintenance in mind of extended life is required. The significance of the structure will be decided at the designed and detailing stage by the structural engineer. He cannot recognize the risk of the corrosion to area to area of Sri Lanka. This thesis will help to identify the risk of corrosion within Sri Lankan map easily. Gathered the temperature data, rainfall, chloride environment and industrial environment and those identified within the Sri Lanka map and compared with BS ISO 12944 Part 2[2]. Refer table 5.2 of this thesis for the above idealization.

7.2 Surface Preparation System to Any Place of Country

Most of the construction projects in Sri Lanka is time competitive. Unfortunately, only few galvanizing plant in Sri Lanka. Therefore, alternative surface preparation methods and alternative corrosion protection system to the country is important.

Numbers of surface preparation method have been discussed with their advantages and disadvantages. In addition to rust grades of steel are also described in the same chapter. The majority of new steelwork usually conforms to surface grade A and surface grade B conditions and occasionally surface grade C condition.

This surface preparation method should be valid not to Colombo area and that should be cover whole island. Considering all literature review, Instead of surface profile amplitude, the surface profile should be deteriorated surface condition B for easy removable of the millscale formed blue- grey tenacious scale. Accelerations of

corrosion are required to save time. Therefore, Sodium chloride was used as the accelerator.

We have to keep this steel about two three days to take this surface. Clear water should be applied for washing of corroded members to Surface Grade B and need to check surface salinity using salinity meter before application of surface preparation. We can use cup-brush application for the surface amplitude. After preparing the surface, before application of the primer the surface should be cleaned using higher pressure air pump. The improved surface should be tested before starting the surface protection paint.

This method little difficult to apply for the existing steel structure, because, there are numbers of bolt in the joint, it is difficult to clean.

7.3 Application of Surface Protection (As Primer/ Final Paint)

Before applying the paint into the surface power mixing of coatings is a key factor in performance to ensure all the ingredients are evenly dispersed in the container before application. To ensure the base and curing agent in two-pack products are evenly dispersed to allow for correct chemical reaction and complete cure to occur.

Considering all these facts, the brush application is the most suitable paint application system to Sri Lanka. If we use any type of paint application system have to improve the Sharpe edges separately *(Refer Annex B of this thesis)*. The paint thickness and type of paint depended on the corrosivity environment category and durability requirement according to table 4.2 and table 4.3 of this thesis.

Considering environmental corrosivity category in Sri Lanka context and durability range the dry film thickness of the paint can be summaries according to table 7.1

Table 7.1: Selection of painting thickness according to environmental corrosivity category and durability

Environmental corrosivity category and durability	SC1	SC2	SC3	SC4
Low 2-5 years	80µm	80µm	160µm	200µm
Medium 5-15 years	150µm	150µm	200µm	280µm
High > 15 years	200µm	200µm	240µm (Zinc)	320µm
			280µm (Non- Zinc)	

7.4 Future work

Study the microclimate of bridges/ flyovers with detailed measurement of sulphur levels etc in order to establish a more accurate corrosivity category.