LEARN OPTIMIZE STEEL

A Software for Optimization of Steel Sections from Existing Fabrication Drawing

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LEARN OPTIMIZE STEEL IN 8 EASY STEPS

A Software for Optimizing Steel Cut Lengths from Fabrication Drawing

INTRO & LIMITATIONS

🔴 Please take Print Out of Every Step, including this page before commencing Learn. <mark>Take a Yellow Marker Pen and Mark the Learning Process while Proceeding further.</mark> This is Essential for Learning. A Working example is also given on our web site. Down load the Working Example.
Again Practice Software using working example.

🔴 The software Optimizes the Steel cutting Lengths,
{using Fabrication Drawing} as per the given standard Length of Member.

Only One Std. Length of Member shall be indicated during Project Creation.

The Software cannot Optimize using more than one Std. Lengths of Reinforcements. Usual Standard Length of Member is say 12000 MM.

🔴 Basically following steps are needed to Optimize the given Fabrication Drawing.

1. Create New Project and give a file name.

2. Add Fabrication Drawing Records or Import From CSV File.
   A CSV file is Comma Separated Value format obtained from EXCEL sheets.
   Any Excel File can be saved as CSV format by SAVE AS option.
   The Name of this File shall be same as that of File created using
   NEW Project option, else error will be generated.

3. Run Display / Add / Edit option and correct any errors Flagged.

4. Now Run Optimize option.

5. Under Display option, view the Optimized File.

That's all.

- Note that Optimized Steel are Grouped as per Member Markings. It is very important to give correct Member Mark / Code. In any given SET the summation of cutting lengths of all the Members marked shall not be exceed std. length. The software indicates wastages after optimization under Each category of Steel Section as well as total wastages. The wastage lengths also includes cutting Lengths greater than 2000 MM. Normally cutting Lengths exceeding 2000 MM are not included in wastages as they are consumed in subsequent construction.

  The gross % wastage can vary between 4 to 8.5 % depending up on file tonnage, number of records and random distributing of steel cutting lengths within the file.

  Sections eligible for optimization are 28 in Nos :-

  MC 75 / MC 100 / MC 125 / MC 150 / MC 175 / MC 200 / MC 250 / MC 300 / MC 350 / MC 400

  MB 100 / MB 125 / MB 150 / MB 175 / MB 200 / MB 250 / MB 300 / MB 350 / MB 400 / MB 450 / MB 500 / MB 600

- File Containing Larger no. of Records, will consume more time to process. It is recommended to split files in to manageable entities.

- In Addition to Optimization, Waste Removal Program is also included with the software. In order to remove wastages, a waste file shall be created. An internal waste file is automatically created when Display / Create Internal Waste File option is run.
  Facility is also provided to import external waste file in CSV Format.
  When Waste Removal is executed both the main Fabrication File and Waste Files are reduced to the extent the wastages are consumed.

- Important Points Regarding Fabrication Drawing Schedule.

  1. Nos cannot be < = 0.

  2. Member Length cannot be < = 0.0 & Member Length cannot be > 12000 MM.

  3. Same Member Mark for Different Section not permitted.

  4. Same Member Mark for Different Cut Length not permitted.

  5. Member mark / code Shall be Unique, corresponding to Each Member Section & Length.

  6. Cutting Length of Each Member shall be in MM.

  7. Nos indicate total numbers of Member corresponding to each unique Member mark.

- Minimum Computer RAM memory of 2 GB is recommended.

- **Use Laser OR Ink Jet Printer.**

STEP NO. 1 : New Project (File) Creation + Editing

Project	Import CSV File	Display/Add/Edit Records	Optimize Records	Disply Results	Waste	Utility

- **When Program starts, the above Menu Bar is displayed.**
  Click the Project -> Create New Project Option.

  The following window will open.

- **You must create a separate Folder / Directory to store your files.**
  I have created a Directory called " 000Optimize_Steel " in D drive to store my Project files.
  When you Click Create New Project option. A Save Window Dialog Box will open up.
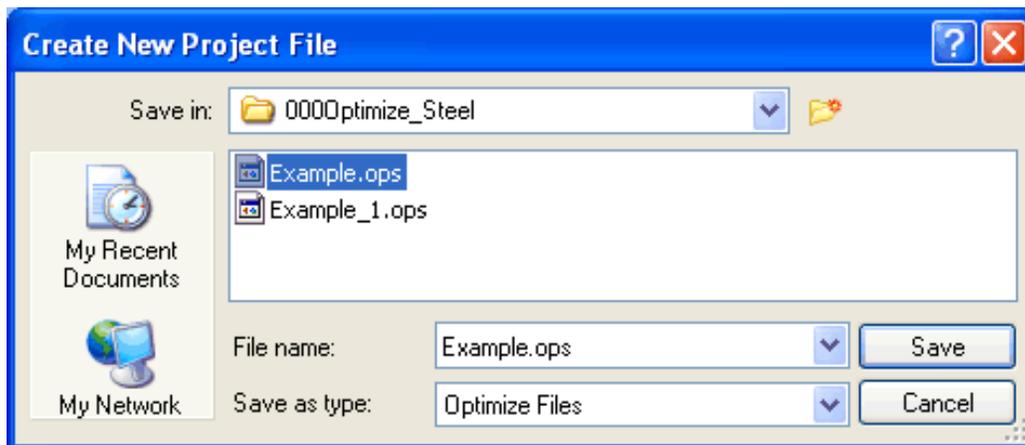
- **Go to 000Optimize_Steel folder & give a file name to your project. I have given " Example " as the name of my new project file. Click the save button.**
  Note that Default Extension of Project File is ops.
  Following project window will open.

6

Add Project Details :

File Name : D:\000Optimize_Steel\Example.ops

Organization	Super Civil CD
Project	20 Story Bldg.
Project No.	8912
Building ID	Admin
Floor No.	12
Floor Level	36.0
Standard Length of Member in MM	12000

O K   **READ ME**   **PRINT**

● **Enter the values of relevant parameters.**

Now Click the READ ME Button, to get vital info as follows.

Please Note:

Nos cannot be < = 0
Member Length cannot be > Std Length.
Same Member Mark for Different Section not permitted.
Standard Member Length Cannot < = 1000 MM.
Run the Add / Edit Records Option and Check & Correct
Errors if any before running optimize steel option.
Before Importing CSV File a User Shall Create the Project having
the same name as that of CSV File which is being Imported.
CSV File Shall be in Following Format.
1st Line or Heading shall be Member Mark, Section, Nos, Length.
Member mark Shall be Unique, corresponding to Each Section & Length.
Length of Each Member shall be in MM.
Nos indicate total numbers of bars corresponding to each unique Member mark.
The optimized out put is in the form of No. of Sets and corresponding Member Marks.
The total Length of Member marked will be < = Std. Length for a given Set / Group.

OK

● **Now Click the Project -> Edit Project Option.**
The Edit Project Option is available to Edit the various Parameters of already created Project File.
Note that this option is similar to the Project -> Create New Project Option.
After Editing Click OK button.
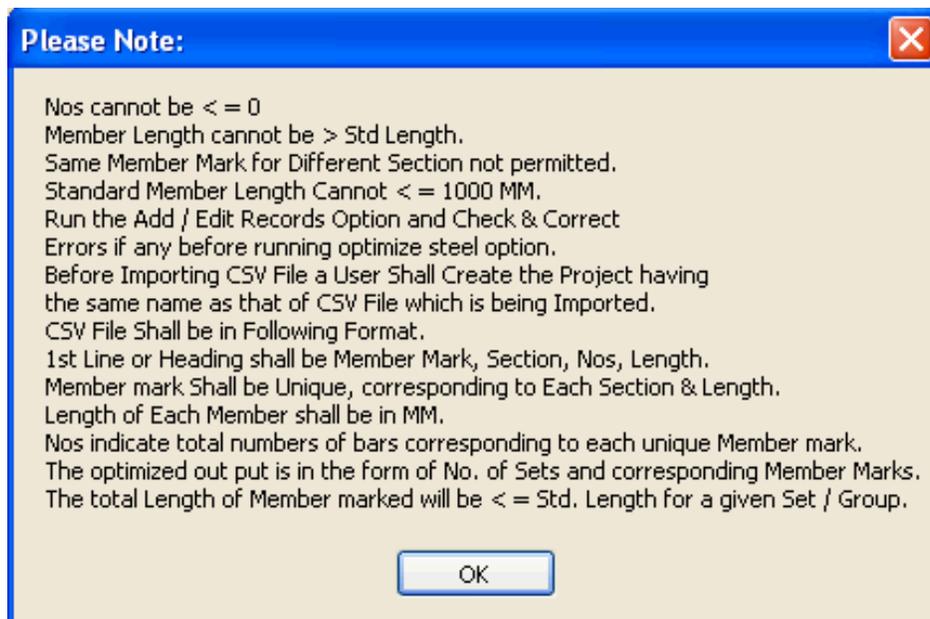
STEP NO. 1 IS OVER.

LEARN OPTIMIZE STEEL STEPS BY STEP

STEP NO. 2 : IMPORT CSV FILE

Project	Import CSV File	Display/Add/Edit Records	Optimize Records	Disply Results	Waste	Utility

🔴 **When Program starts, the above Menu Bar is displayed.**

Click the " Import CSV File Option ".

Before Importing any CSV File, 1st create Project file having the same name as that of CSV file.

**A CSV file is Comma Separated Value format obtained from EXCEL sheets.**
   Any Excel File can be saved as CSV format by SAVE AS option.

The 1st Line shall be Heading: Member_Mark, Section, Nos, Length.
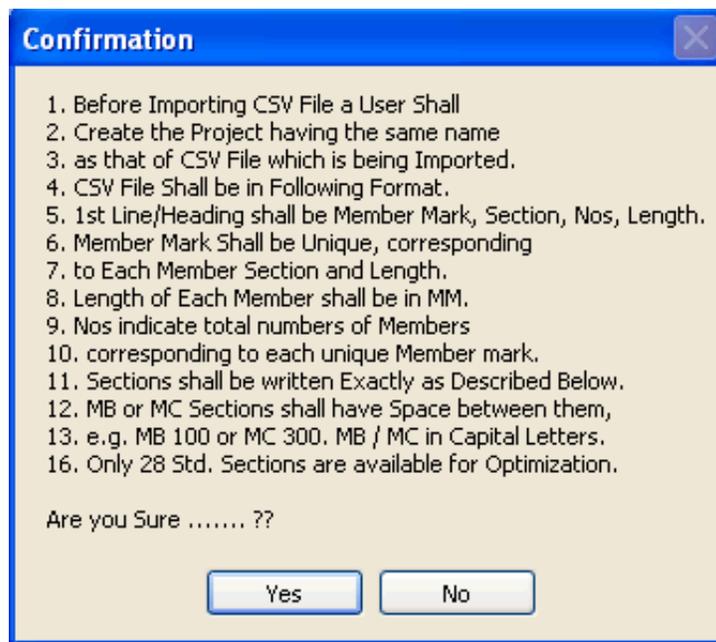**Cutting length of Sections shall be in MM.**

Provide one space between Section and its size, like MC 150, MB 200, while entering data.
In absence of space, program will not accept section designation.

The following window will open.
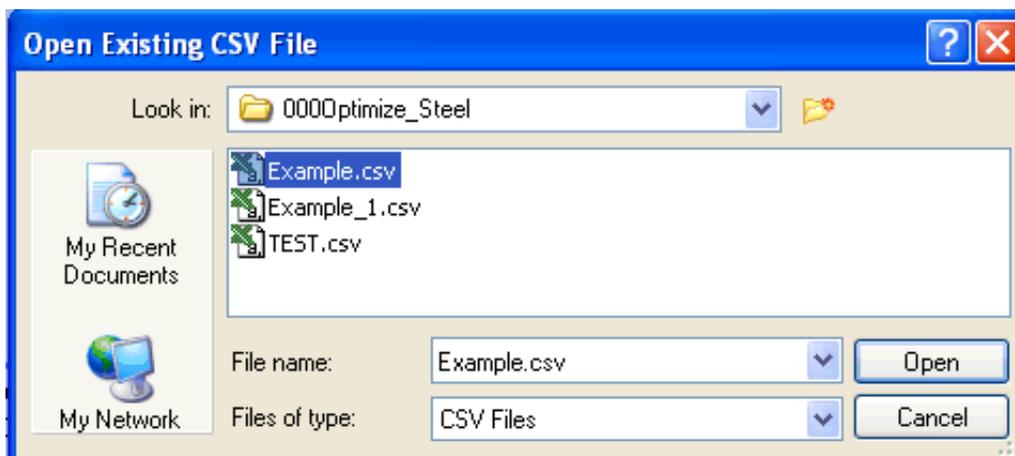
🔴 **Now select " Example " File & Press Open Button.**

The following important message will be displayed.

Confirmation

1. Before Importing CSV File a User Shall
2. Create the Project having the same name
3. as that of CSV File which is being Imported.
4. CSV File Shall be in Following Format.
5. 1st Line/Heading shall be Member Mark, Section, Nos, Length.
6. Member Mark Shall be Unique, corresponding
7. to Each Member Section and Length.
8. Length of Each Member shall be in MM.
9. Nos indicate total numbers of Members
10. corresponding to each unique Member mark.
11. Sections shall be written Exactly as Described Below.
12. MB or MC Sections shall have Space between them,
13. e.g. MB 100 or MC 300. MB / MC in Capital Letters.
16. Only 28 Std. Sections are available for Optimization.

Are you Sure .... ??

[Yes] [No]

- **When you are sure click Yes, CSV file will be imported. Now Click Display / Add / Edit Records option to check for any errors in imported file.**

STEP NO. 2 IS OVER.
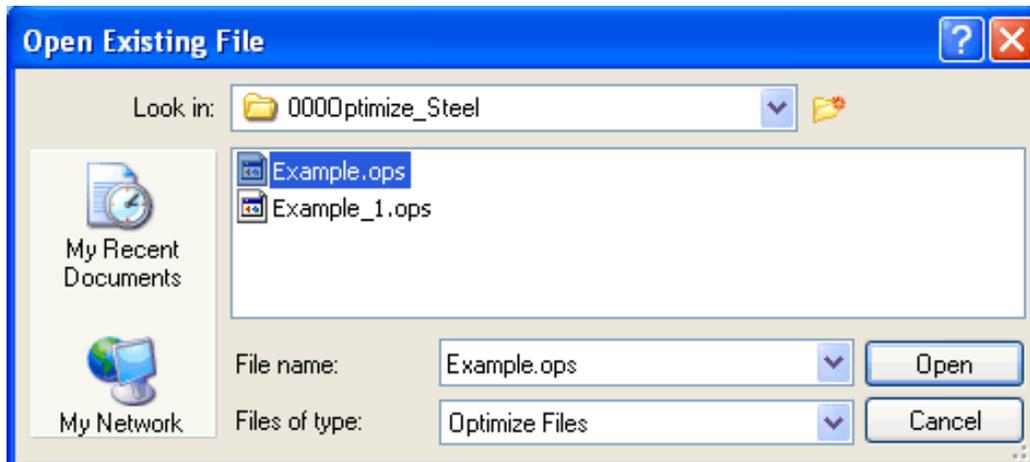
LEARN OPTIMIZE STEEL STEPS BY STEP

STEP NO. 3 :
DISPLAY / EDIT / ADD RECORDS

| Project | Import CSV File | Display/Add/Edit Records | Optimize Records | Disply Results | Waste | Utility |

🔴 **When Program starts, the above Menu Bar is displayed.**

Click the " Display / Add / Edit Records " Option.

The following window will open.

🔴 **Select the " Example " File, following window will appear.**

ADD / EDIT MEMBER SCHEDULE

Record #	Member Mark	Section	Nos	Length	
1	1	MC 125	1	2940	
2	1	MC 125	1	2940	
3	1	MC 125	1	2940	
4	2	MC 125	1	2940	
5	2	MC 125	1	2940	
6	2	MC 125	1	2940	
7	3	MC 125	1	2940	
8	3	MC 125	1	2940	
9	3	MC 125	1	2940	
10	4	MC 125	1	2940	
11	4	MC 125	1	2940	
12	4	MC 125	1	2940	
13	5	MC 125	1	2940	
14	5	MC 125	1	2940	
15	5	MC 125	1	2940	
16	6	MC 125	1	2940	
17	6	MC 125	1	2940	
18	6	MC 125	1	2940	
19	7	MC 150	1	3440	
20	7	MC 150	1	3440	
21	7	MC 150	1	3440	

Record No. : 1 of 279

Record No.	1	Member Mark	1	ISMC / ISMB Section	MC 125
Numbers	1	Cutting Length in MM	2940	Total Steel in Tons	21.628

[Read Me] [Prev] [Next] [Copy] [Paste] [Last] [1 st] [Clear] [Copy All]

[Update] [Go To Rec] [Memb Mark] [Remove] [Add Record] [Print] [O K]

● The " Copy All " button copies data from the selected ROW to all the ROWS. Later on a user can change the values selectively.

Use Copy & Paste Button to copy & paste values to different rows, in case the values are not same.

The " Prev ", " Next ", " Last ", " 1 st ", & " Go to Rec " Buttons are for displaying / Focusing the cursor on Previous, Next, First or required Record Number.

The Member Mark Button will search and Display the required Member Mark / Code.

The " Clear " Button clears all values. The Update Button is for saving the Records intermittently.

The " Print " Button is for printing of values from the Table. Use laser OR Inkjet Printer.

The Remove Button deletes the Selected Record.

The " Add Record " button is very important one. User can add one record at a time, the Member mark will be automatically generated as Last Member mark no. + 1.

Length of Members shall be nearest to 5 MM, Else program will convert the same.

In order to Sort the Values in Ascending OR Descending Order, Just Click Column Header at Top.

Member Mark shall be Integer and not alpha-numeric.

**Click Read Me Button and go through the Important points.**

STEP NO. 3 IS OVER.

LEARN OPTIMIZE STEEL STEPS BY STEP

STEP NO. 4 :
OPTIMIZE RECORDS + DISPLAY + MTO

Project	Import CSV File	Display/Add/Edit Records	Optimize Records	Disply Results	Waste	Utility

● **When Program starts, the above Menu Bar is displayed.**

Click the " Optimize Record " Option and Select Example File. Following Message is displayed.

Confirmation

Have you Run the Add / Edit Records Option
and Checked & Corrected Errors If Any ??

Yes   No
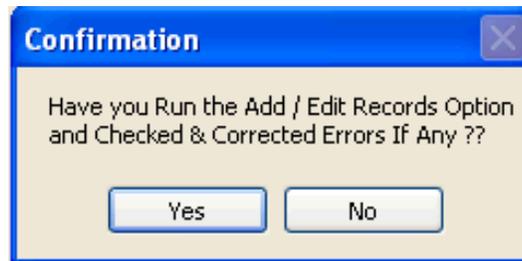
● **The above is very Important. Never Run Optimize option without running the Add / Edit Option, Else In-correct results will be obtained.**

Click Yes if you are sure. A window will be displayed, with a message

HOLD ON, WORK IN PROGRESS, TAKES TIME ...

File Containing Larger no. of Records, will consume more time. It is recommended to split files in to manageable entities.

After completion of program execution, following Message is displayed.

Please Note

Records optimized, Proceed to Display.

OK
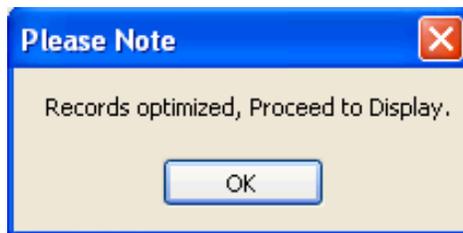
● **Let us Proceed to display optimized records.**
Click Display Results. Following Menu will be displayed.

● **Optimized Records**

● **MTO < Material Take Off > { Summary }**

● **Display / Create Internal Waste**

Now click Optimized Records option. Following Optimization will be displayed.

Details of Optimization of Steel

Organization : Super Civil CD
Project : 20 Story Bldg.
Project No : 8912
Building ID : Admin
Floor Number : 12
Floor Level : 36.0
Standard Member Length : 12000
File Name : D:\000Optimize_Steel\Example.ops

For MC 125 Section :

Number of Sets : 1 : Members Marked : 91,91,91,92
Number of Sets : 1 : Members Marked : 92,92,93,93
Number of Sets : 1 : Members Marked : 1,1,1,2
Number of Sets : 1 : Members Marked : 2,2,3,3
Number of Sets : 1 : Members Marked : 3,4,4,4
Number of Sets : 1 : Members Marked : 5,5,5,6
Number of Sets : 1 : Members Marked : 6,6,19,19
Number of Sets : 1 : Members Marked : 19,20,20,20
Number of Sets : 1 : Members Marked : 21,21,21,46
Number of Sets : 1 : Members Marked : 46,46,47,47
Number of Sets : 1 : Members Marked : 47,48,48,48
Number of Sets : 1 : Members Marked : 93

Total Nos. of Std. Length of MC 125 Sec. Required = 12
Total Length of MC 125 Sec. Required = 144 M
Total Weight of MC 125 Sec. = 1828.8 Kg
Total Weight of MC 125 Sec. as per FAB drg. = 1687.07 Kg
Wastage of MC 125 Section = 8.4 %

For MC 150 Section :

Number of Sets : 1 : Members Marked : 64,64,64,65
Number of Sets : 1 : Members Marked : 65,65,66,66
Number of Sets : 1 : Members Marked : 66,67,67,67
Number of Sets : 1 : Members Marked : 68,68,68,69
Number of Sets : 1 : Members Marked : 69,69,88,88
Number of Sets : 1 : Members Marked : 88,89,89,89
Number of Sets : 1 : Members Marked : 34,35,35,35
Number of Sets : 1 : Members Marked : 40,40,40,41
Number of Sets : 1 : Members Marked : 37,37,38,38
Number of Sets : 1 : Members Marked : 25,25,25,26
Number of Sets : 1 : Members Marked : 26,26,27,27
Number of Sets : 1 : Members Marked : 27,28,28,28
Number of Sets : 1 : Members Marked : 29,29,29,30
Number of Sets : 1 : Members Marked : 30,30,31,31
Number of Sets : 1 : Members Marked : 31,32,32,32
Number of Sets : 1 : Members Marked : 33,33,33,34
Number of Sets : 1 : Members Marked : 34,36,36,36
Number of Sets : 1 : Members Marked : 37,38,39,39
Number of Sets : 1 : Members Marked : 39,41,41,42
Number of Sets : 1 : Members Marked : 50,50,51,51
Number of Sets : 1 : Members Marked : 56,56,56,57
Number of Sets : 1 : Members Marked : 52,52,53,53
Number of Sets : 1 : Members Marked : 58,58,59,59
Number of Sets : 1 : Members Marked : 42,42,49,49
Number of Sets : 1 : Members Marked : 18,49,50,76
Number of Sets : 1 : Members Marked : 51,52,53,54
Number of Sets : 1 : Members Marked : 54,54,55,55
Number of Sets : 1 : Members Marked : 55,57,57,58
Number of Sets : 1 : Members Marked : 59,60,60,60
Number of Sets : 1 : Members Marked : 81,90,90,90
Number of Sets : 1 : Members Marked : 18,18,76,76
Number of Sets : 1 : Members Marked : 17,17,77,77
Number of Opets : 1 : Members Marked : 16,17,77,78
Number of Sets : 1 : Members Marked : 7,7,7
Number of Sets : 1 : Members Marked : 8,8,8
Number of Sets : 1 : Members Marked : 9,9,9

Number of Sets : 1 : Members Marked : 10,10,10
Number of Sets : 1 : Members Marked : 11,11,11
Number of Sets : 1 : Members Marked : 12,12,12
Number of Sets : 1 : Members Marked : 13,13,13
Number of Sets : 1 : Members Marked : 14,14,14
Number of Sets : 1 : Members Marked : 15,15,15
Number of Sets : 1 : Members Marked : 16,16,78,78
Number of Sets : 1 : Members Marked : 79,79,79,80
Number of Sets : 1 : Members Marked : 80,80,81,81

Total Nos. of Std. Length of MC 150 Sec. Required = 45
Total Length of MC 150 Sec. Required = 540 M
Total Weight of MC 150 Sec. = 8856 Kg
Total Weight of MC 150 Sec. as per FAB drg. = 8448.62 Kg
Wastage of MC 150 Section = 4.82 %

For MC 200 Section :

Number of Sets : 1 : Members Marked : 82,82,82
Number of Sets : 1 : Members Marked : 83,83,83
Number of Sets : 1 : Members Marked : 84,84,84
Number of Sets : 1 : Members Marked : 85,85,85
Number of Sets : 1 : Members Marked : 86,86,86
Number of Sets : 1 : Members Marked : 87,87,87
Number of Sets : 1 : Members Marked : 70,70
Number of Sets : 1 : Members Marked : 70,71
Number of Sets : 1 : Members Marked : 71,71
Number of Sets : 1 : Members Marked : 72,72
Number of Sets : 1 : Members Marked : 72

Total Nos. of Std. Length of MC 200 Sec. Required = 11
Total Length of MC 200 Sec. Required = 132 M
Total Weight of MC 200 Sec. = 2917.2 Kg
Total Weight of MC 200 Sec. as per FAB drg. = 2750.79 Kg
Wastage of MC 200 Section = 6.05 %

For MB 200 Section :

Number of Sets : 1 : Members Marked : 73,73
Number of Sets : 1 : Members Marked : 73,74
Number of Sets : 1 : Members Marked : 74,74
Number of Sets : 1 : Members Marked : 75,75
Number of Sets : 1 : Members Marked : 75

Total Nos. of Std. Length of MB 200 Sec. Required = 5
Total Length of MB 200 Sec. Required = 60 M
Total Weight of MB 200 Sec. = 1524 Kg
Total Weight of MB 200 Sec. as per FAB drg. = 1332.74 Kg
Wastage of MB 200 Section = 14.35 %

For MB 250 Section :

Number of Sets : 1 : Members Marked : 61,61
Number of Sets : 1 : Members Marked : 61,62
Number of Sets : 1 : Members Marked : 62,62
Number of Sets : 1 : Members Marked : 63,63
Number of Sets : 1 : Members Marked : 63

Total Nos. of Std. Length of MB 250 Sec. Required = 5
Total Length of MB 250 Sec. Required = 60 M
Total Weight of MB 250 Sec. = 2238 Kg
Total Weight of MB 250 Sec. as per FAB drg. = 1957.13 Kg
Wastage of MB 250 Section = 14.35 %

For MB 350 Section :

Number of Sets : 1 : Members Marked : 22,22
Number of Sets : 1 : Members Marked : 22,23
Number of Sets : 1 : Members Marked : 23,23
Number of Sets : 1 : Members Marked : 24,24
Number of Sets : 1 : Members Marked : 24,43

Number of Sets : 1 : Members Marked : 43,43
Number of Sets : 1 : Members Marked : 44,44
Number of Sets : 1 : Members Marked : 44,45
Number of Sets : 1 : Members Marked : 45,45

Total Nos. of Std. Length of MB 350 Sec. Required = 9
Total Length of MB 350 Sec. Required = 108 M
Total Weight of MB 350 Sec. = 5659.2 Kg
Total Weight of MB 350 Sec. as per FAB drg. = 5451.7 Kg
Wastage of MB 350 Section = 3.81 %

Total Actual Weight of Steel = 23.023 Ton

Total Theoretical Weight of Steel as per FAB drg. = 21.628 Ton

Total Wastage of Structural Steel = 6.45 %

● Note that Optimized members are grouped Section wise. Under Each Section; Members are Grouped in to no. of sets, containing optimized Members Marked.

Also Displayed are Total Nos. of Std. Length of Members Required, Total Length of Sections Required, Total Weight of Section, Total Weight of Section as per Fabrication Drawing and Wastage of Individual and Total Sections.

Note that above Wastage includes length exceeding 2.0 M, if these Lengths are excluded then Wastage % will come down to only 3.18 %.

Now click MTO option. Select Example File, Following window will be displayed.

SUMMARY OF STRUCTURAL STEEL IN KG

MC 75	0
MC 100	0
MC 125	1687.07
MC 150	8448.62
MC 175	0
MC 200	2750.79
MC 250	0
MC 300	0
MC 350	0
MC 400	0
MB 100	0
MB 125	0
MB 150	0
MB 175	0
MB 200	1332.74
MB 250	1957.13
MB 300	0
MB 350	5451.7
MB 400	0
MB 450	0
MB 500	0
MB 600	0

TOTAL STRUCTURAL STEEL IN TONS = 21.628

TOTAL STRUCTURAL STEEL IN TONS = 21.628

STEP NO. 4 IS OVER.

LEARN OPTIMIZE STEEL STEPS BY STEP

STEP NO. 5 :
DISPLAY / CREATE INTERNAL WASTE

Project	Import CSV File	Display/Add/Edit Records	Optimize Records	Disply Results	Waste	Utility

● When Program starts, the above Menu Bar is displayed.

Click Display Results. Following Menu will be displayed.

● Optimized Records

● MTO < Material Take Off > { Summary }

● Display / Create Internal Waste

Now click Display / Create Internal Waste option. Select the Example File. Following Window will be displayed.

Details of Wastages of Structural Steel

Organization : Super Civil CD
Project : 20 Story Bldg.
Project No : 8912
Building ID : Admin
Floor Number : 12
Floor Level : 36.0
Standard Member Length : 12000
File Name : D:\000Optimize_Steel\Example.ops

Wastages For MC 125 Section :

Number of Sets : 1 : Members Marked : 1/1/1/2 : Waste Length Per Set = 240 MM
Number of Sets : 1 : Members Marked : 2/2/3/3 : Waste Length Per Set = 240 MM
Number of Sets : 1 : Members Marked : 3/4/4/4 : Waste Length Per Set = 240 MM
Number of Sets : 1 : Members Marked : 5/5/5/6 : Waste Length Per Set = 240 MM
Number of Sets : 1 : Members Marked : 6/6/19/19 : Waste Length Per Set = 240 MM
Number of Sets : 1 : Members Marked : 19/20/20/20 : Waste Length Per Set = 240 MM
Number of Sets : 1 : Members Marked : 21/21/21/46 : Waste Length Per Set = 240 MM
Number of Sets : 1 : Members Marked : 46/46/47/47 : Waste Length Per Set = 240 MM
Number of Sets : 1 : Members Marked : 47/48/48/48 : Waste Length Per Set = 240 MM
Number of Sets : 1 : Members Marked : 93 : Waste Length Per Set = 9000 MM

Total Waste Length of MC 125 Sec. in M = 11.16
Total Wastage of MC 125 Sec. in Kg = 141.73

Wastages For MC 150 Section :

Number of Sets : 1 : Members Marked : 34/35/35/35 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 40/40/40/41 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 37/37/38/38 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 25/25/25/26 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 26/26/27/27 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 27/28/28/28 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 29/29/29/30 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 30/30/31/31 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 31/32/32/32 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 33/33/33/34 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 34/36/36/36 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 37/38/39/39 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 39/41/41/42 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 50/50/51/51 : Waste Length Per Set = 240 MM

Number of Sets : 1 : Members Marked : 56/56/56/57 : Waste Length Per Set = 240 MM
Number of Sets : 1 : Members Marked : 52/52/53/53 : Waste Length Per Set = 240 MM
Number of Sets : 1 : Members Marked : 58/58/59/59 : Waste Length Per Set = 240 MM
Number of Sets : 1 : Members Marked : 42/42/49/49 : Waste Length Per Set = 200 MM
Number of Sets : 1 : Members Marked : 18/49/50/76 : Waste Length Per Set = 200 MM
Number of Sets : 1 : Members Marked : 51/52/53/54 : Waste Length Per Set = 240 MM
Number of Sets : 1 : Members Marked : 54/54/55/55 : Waste Length Per Set = 240 MM
Number of Sets : 1 : Members Marked : 55/57/57/58 : Waste Length Per Set = 240 MM
Number of Sets : 1 : Members Marked : 59/60/60/60 : Waste Length Per Set = 240 MM
Number of Sets : 1 : Members Marked : 81/90/90/90 : Waste Length Per Set = 520 MM
Number of Sets : 1 : Members Marked : 18/18/76/76 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 17/17/77/77 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 16/17/77/78 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 7/7/7 : Waste Length Per Set = 1680 MM
Number of Sets : 1 : Members Marked : 8/8/8 : Waste Length Per Set = 1680 MM
Number of Sets : 1 : Members Marked : 9/9/9 : Waste Length Per Set = 1680 MM
Number of Sets : 1 : Members Marked : 10/10/10 : Waste Length Per Set = 1680 MM
Number of Sets : 1 : Members Marked : 11/11/11 : Waste Length Per Set = 1680 MM
Number of Sets : 1 : Members Marked : 12/12/12 : Waste Length Per Set = 1680 MM
Number of Sets : 1 : Members Marked : 13/13/13 : Waste Length Per Set = 1680 MM
Number of Sets : 1 : Members Marked : 14/14/14 : Waste Length Per Set = 1680 MM
Number of Sets : 1 : Members Marked : 15/15/15 : Waste Length Per Set = 1680 MM
Number of Sets : 1 : Members Marked : 16/16/78/78 : Waste Length Per Set = 160 MM
Number of Sets : 1 : Members Marked : 79/79/79/80 : Waste Length Per Set = 2080 MM
Number of Sets : 1 : Members Marked : 80/80/81/81 : Waste Length Per Set = 2080 MM

Total Waste Length of MC 150 Sec. in M = 24.84
Total Wastage of MC 150 in Kg = 407.38

Wastages For MC 200 section :

Number of Sets : 1 : Members Marked : 70/70 : Waste Length Per Set = 340 MM
Number of Sets : 1 : Members Marked : 70/71 : Waste Length Per Set = 340 MM
Number of Sets : 1 : Members Marked : 71/71 : Waste Length Per Set = 340 MM
Number of Sets : 1 : Members Marked : 72/72 : Waste Length Per Set = 340 MM
Number of Sets : 1 : Members Marked : 72 : Waste Length Per Set = 6170 MM

Total Waste Length of MC 200 Sec. in M = 7.53
Total Wastage of MC 200 Sec. in Kg = 166.41

Wastages For MB 200 Section :

Number of Sets : 1 : Members Marked : 73/73 : Waste Length Per Set = 340 MM
Number of Sets : 1 : Members Marked : 73/74 : Waste Length Per Set = 340 MM
Number of Sets : 1 : Members Marked : 74/74 : Waste Length Per Set = 340 MM
Number of Sets : 1 : Members Marked : 75/75 : Waste Length Per Set = 340 MM
Number of Sets : 1 : Members Marked : 75 : Waste Length Per Set = 6170 MM

Total Waste Length of MB 200 Sec. in M = 7.53
Total Wastage of MB 200 Sec. in Kg = 191.26

Wastages For MB 250 Section :

Number of Sets : 1 : Members Marked : 61/61 : Waste Length Per Set = 340 MM
Number of Sets : 1 : Members Marked : 61/62 : Waste Length Per Set = 340 MM
Number of Sets : 1 : Members Marked : 62/62 : Waste Length Per Set = 340 MM
Number of Sets : 1 : Members Marked : 63/63 : Waste Length Per Set = 340 MM
Number of Sets : 1 : Members Marked : 63 : Waste Length Per Set = 6170 MM

Total Waste Length of MB 250 Sec. in M = 7.53
Total Wastage of MB 250 Sec. in Kg = 280.87

Wastages For MB 350 Section :

Number of Sets : 1 : Members Marked : 22/22 : Waste Length Per Set = 440 MM
Number of Sets : 1 : Members Marked : 22/23 : Waste Length Per Set = 440 MM
Number of Sets : 1 : Members Marked : 23/23 : Waste Length Per Set = 440 MM
Number of Sets : 1 : Members Marked : 24/24 : Waste Length Per Set = 440 MM
Number of Sets : 1 : Members Marked : 24/43 : Waste Length Per Set = 440 MM
Number of Sets : 1 : Members Marked : 43/43 : Waste Length Per Set = 440 MM
Number of Sets : 1 : Members Marked : 44/44 : Waste Length Per Set = 440 MM

Number of Sets : 1 : Members Marked : 44/45 : Waste Length Per Set = 440 MM
Number of Sets : 1 : Members Marked : 45/45 : Waste Length Per Set = 440 MM

Total Waste Length of MB 350 Sec. in M = 3.96
Total Wastage of MB 350 Sec. in Kg = 207.5

Note :
(1) A Waste File is Created as D:\000Optimize_Steel\Example.wst
(2) Use this File to Remove available Waste Lengths from future FAB File.
(3) FAB File means Fabrication Drawing File.

● **Note that Wastages of Section are displayed in the same manner as that of Optimized Steel in step no. 4.**

The Waste Includes the Cutting Length above 2000 MM also. Normally cutting Lengths exceeding 2000 MM are not included in wastages as they are consumed in subsequent construction.

When a user executes this option, an Internal waste file is created automatically with wst extension. In our case file name is Example.wst

Use this File to Remove available Waste Lengths from future Fabrication Drawing File. Refer Waste option.

STEP NO. 5 IS OVER.

STEP NO. 6 :
CREATE / DISPLAY / IMPORT EXTERNAL
CSV WASTE FILE

Project	Import CSV File	Display/Add/Edit Records	Optimize Records	Disply Results	Waste	Utility

🔴 **When Program starts, the above Menu Bar is displayed.**

Click the " Waste " Option. Following menu is displayed.

> Create External Waste File
> Import CSV Waste File
> Display / Add / Edit Waste File
> Remove Waste From File
> Display Matched Wastes

🔴 **Note that Create External Waste is similar to Creating Project file. Refer Step no. 1.**

Importing CSV Waste File is similar to Importing Project CSV file. Refer Step no. 2.

Display / Add / Edit Waste File is similar to Display / Add / Edit Project File. Refer Step no. 3.

STEP NO. 6 IS OVER.

STEP NO. 7 :
REMOVE / DISPLAY WASTAGES

Project	Import CSV File	Display/Add/Edit Records	Optimize Records	Disply Results	Waste	Utility

🔴 When Program starts, the above Menu Bar is displayed.

Click the " Waste " Option. Following menu is displayed.

Create External Waste File
Import CSV Waste File
Display / Add / Edit Waste File
Remove Waste From File
Display Matched Wastes

🔴 Removes waste From File option takes 2 Files, compares them and remove waste from them. The 1st File shall be main Fabrication drawing file from which waste is to be removed, considering the available waste, which is in 2nd file called waste file.

Now Click Remove waste From File option. Following window will open up.

STEEL WASTAGE REMOVAL

Select File From Which Waste is to be Removed	D:\000Optimize_Steel\Example_1.ops

Select File Containing Reinforcement Wastes	D:\000Optimize_Steel\Example.wst

- Ve Tolerance of Steel in MM `25`   + Ve Tolerance of Steel in MM `50`

EXIT   **CONTINUE**

- **Select File from which Waste is to be Removed (Example_1.ops), next Select File Containing Steel Wastes (Example.wst).**

  Note that Example_1.ops is the Fabrication drawing (FAB) file of the another Floor / Project, and Example.wst is the waste generated by the Current Floor (Step 5).

  Give - ve and + ve Tolerance of Steel in MM. A user can give very high + ve tolerance say 1000 MM,

  if Lots of wastages are to be consumed.

  Click the Continue button. Possible Wastages will be Removed from Example_1.ops file.

  Note that after wastage removal, records of both the files (Example_1.ops & Example.wst) will get reduced to the extent wastage removal was feasible.

  Now Click display Matched Wastes option. Following Waste Removal Report is generated.

```
Details of Wastages Removed from FAB File
----------------------------------------------------------------
FAB File Name : D:\000Optimize_Steel\Example_1.ops
Waste File Name : D:\000Optimize_Steel\Example.wst
- ve Steel Tolerance in MM : 25
+ ve Steel Tolerance in MM : 50
----------------------------------------------------------------
Member Marked Matched and Removed from FAB File : 94
Corresponding Member Marked Removed from Waste File : 38

Member Marked Matched and Removed from FAB File : 94
Corresponding Member Marked Removed from Waste File : 39

Member Marked Matched and Removed from FAB File : 94
Corresponding Member Marked Removed from Waste File : 40

Member Marked Matched and Removed from FAB File : 94
Corresponding Member Marked Removed from Waste File : 41

Member Marked Matched and Removed from FAB File : 94
Corresponding Member Marked Removed from Waste File : 42

Member Marked Matched and Removed from FAB File : 94
Corresponding Member Marked Removed from Waste File : 43

Member Marked Matched and Removed from FAB File : 94
Corresponding Member Marked Removed from Waste File : 44

Member Marked Matched and Removed from FAB File : 94
Corresponding Member Marked Removed from Waste File : 45

Member Marked Matched and Removed from FAB File : 94
Corresponding Member Marked Removed from Waste File : 46

Member Marked Matched and Removed from FAB File : 95
Corresponding Member Marked Removed from Waste File : 10

Member Marked Matched and Removed from FAB File : 96
Corresponding Member Marked Removed from Waste File : 48

Member Marked Matched and Removed from FAB File : 96
Corresponding Member Marked Removed from Waste File : 49

Member Marked Matched and Removed from FAB File : 97
Corresponding Member Marked Removed from Waste File : 59

Member Marked Matched and Removed from FAB File : 98
Corresponding Member Marked Removed from Waste File : 64

Total Wastages Consumed in Kg : 817.35
```

Structural Steel Saved : 3.64 %
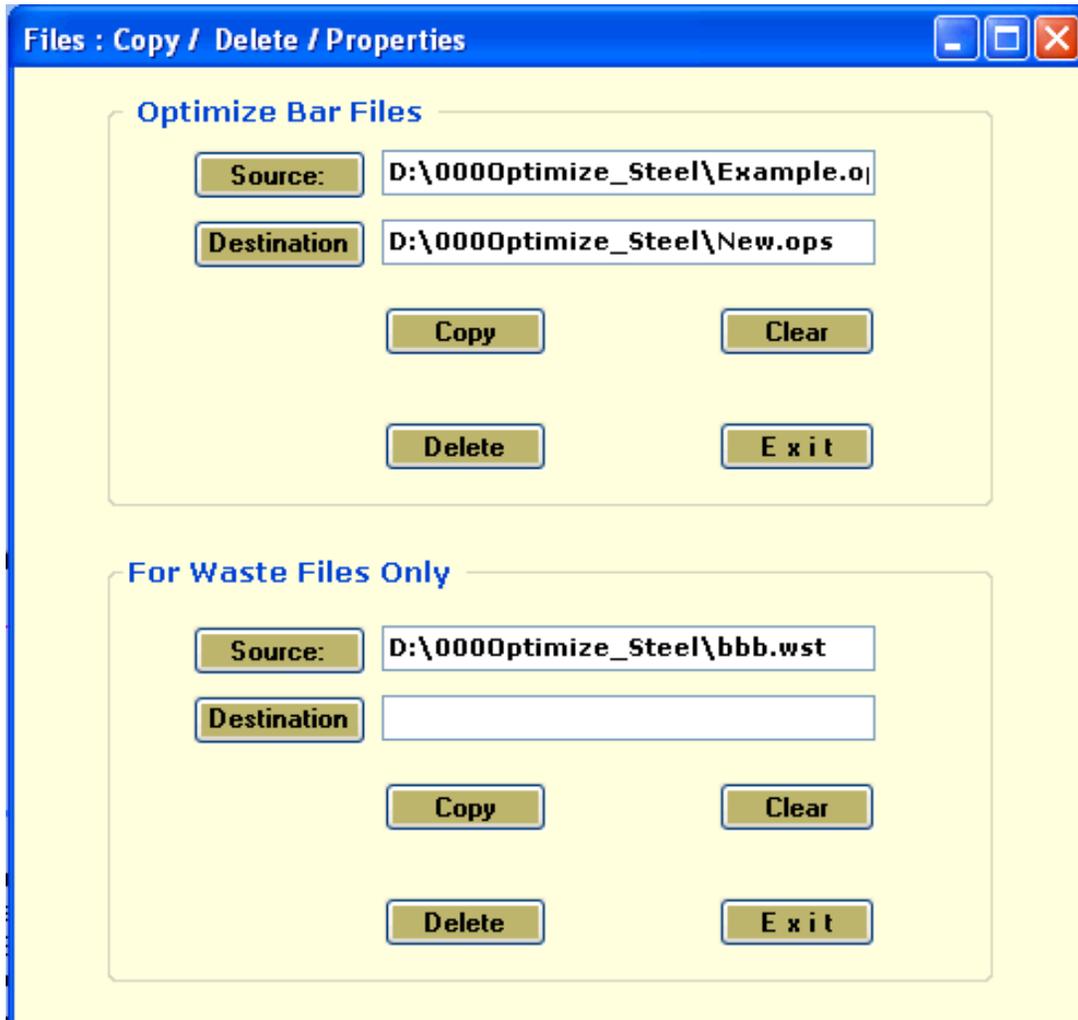
STEP NO. 7 IS OVER.

STEP NO. 8 : UTILITY: FILE COPY AND DELETE

Project	Import CSV File	Display/Add/Edit Records	Optimize Records	Disply Results	Waste	Utility

🔴 **When Program starts, the above Menu Bar is displayed.**

Click the " Utility Option ".

The following window will open.

🔴 **Two separate options are provided, one for Optimize Steel and another for Waste Files.**
These options are for Copying and Deleting of Optimize Steel and Waste Files respectively.
Indicate both Source and Destination File for Copying and Indicate only Source File
for Deleting all Optimize Steel and Waste Files.

STEP NO. 8 IS OVER.

OTHER SOFTWARES:

SUPER CIVIL CD - Single Point Solution To Your Civil Engineering Needs

SUPER RATE ANALYSIS - Rate Analysis Of 1299 Nos. Of Civil Engineering Items

2D FRAME ANALYSIS - Discover The Beauty Of Structural Analysis

R C F - A Software for Analysis, Design, Estimation & Costing of RCC Floors

S S F - Analysis, Design, Estimation & Costing of Steel Buildings, revised as per IS 800 : 2007

Q T Y -   Quantity Estimation & Cost, Project Control

SUPER REAL VALUATION -   A Software For Immovable Properties

ROADS -   Pavement Design & Rate Analysis Of Road Items

ROAD ESTIMATE -   Quantity Estimation & Cost, Project Control For Road

ELECTRIC COST -   Costing, Project Control & MDS For Electrical Projects

HVAC COST -   Costing, Project Control & Design For HVAC Engineers

BILLING JI -   A Database Management Software For General Billing

RA BILL -   A Database Management Software For Item Rate Contract Billing

BUILDERS BILL -   A Database Management Software for Billing of Lump sum Contracts

BID ANALYSIS -   A Software For Technical & Commercial Tender Analysis

RAFT FOUNDATION -   Analysis, Design, Estimation, Costing & Drawing of RCC Raft Foundation

STEEL_2007 - Limit State design of Steel as per IS 800 : 2007

SITE CONTROL - A Management Software for Resource Control At Site.

COMPOSITE - A Software for Analysis, Design, Costing & Drawing of Composite Floor Buildings

DESIGN & DRAWING CONTROL -   A DBM Software for Control of Design & Drawing Manhours.

INSTA COST -   A Software for Estimating Project   Cost & Tender SOQ Instantly

FLAT SLAB - A Software for Analysis, Design, Estimation, Costing & Drawings of Flat Slabs

FLAT RAFT - A Software for Analysis, Design, Estimation, Costing & Drawings of Rigid RCC Flat Rafts

OPTIMIZE BAR   - A Software for Optimization of Reinforcements from Existing Bar Bending Schedule

AutoQty - A Software for Automatic Quantity & Cost Estimation from AutoCAD Drawings